FLORIDA WILDLIFE®

Volume 45, Number 4

July-August 1991

Tossing this trash overboard could leave death in your wake.

Throwing a few plastic items off a boat may seem harmless enough. What's one more six-pack ring, plastic bag, or tangled fishing line?

Actually, it's one more way a fish, bird, seal, or other animal could die.

Fish, birds, and seals are known to strangle in carelessly discarded six-pack rings. Sea turtles eat plastic bags – which they mistake for jellyfish – and suffer internal injury, intestinal blockage, or death by starvation.

Other plastic trash can be dangerous, too. Birds are known to ingest everything from small plastic pieces to plastic cigarette lighters and bottle caps.

Birds, seals, sea turtles, and whales die when they become trapped in old fishing line, rope, and nets.

Plastic debris also can foul boat propellers and block cooling intakes, causing annoying – sometimes dangerous – delays and causing costly repairs.

So please, save your trash for proper disposal on land.

That's not all you'll be saving.

To learn more about how you can help, write: Center for Environmental Education, 1725 DeSales Street, N.W., Suite 500, Washington, D.C. 20036.

Florida office:

Center for Marine Conservation
One Beach Drive, S.E., Suite 304
St. Petersburg, FL 33701

FLORIDA WILDLIFE®

Volume 45, Number 4 **July-August 1991**

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FLORIDA WILDLIFE (ISSN 0015-4369) is published bimonthly by the Florida Game and Fresh Water Fish Commission, 620 South Meridian Street, Tallahassee, Florida 32399-1600. Second-class postage paid at Tallahassee, Florida, Post Office Publication Number 202440. MATERIALS IN FLORIDA WILDLIFE include copyrighted materials that are property of individual contributors. WRITTEN PERMISSION TO USE the publisher's materials will be granted by the editor for noncommercial, public informational purposes. MANUSCRIPTS, PHOTOGRAPHS AND OTHER SUBMISSIONS are received only with the understanding that the Publisher assumes no responsibility for any loss or damage. Contributors should request "HOW TO SUBMIT" before sending materials. SUBSCRIPTION PRICES: $7 for one year (six issues); $14 for two years (12 issues); $20 for three years (18 issues).

Gray Rat Snake

Learn how to recognize Florida's common nonvenomous snakes by reading an article about these harmless residents.

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The watercolor painting of black bears by Terry Smith is the winner of FLORIDA WILDLIFE's annual cover art contest. See page 25 to learn how you can obtain a free print of this fine work.

Dandelion

A Not-So-Worthless Weed

By Tom and Joanne O'Toole

To most homeowners, dandelions are considered the scourge of the landscape, a blight on what otherwise might be a "perfect" lawn. Not everyone shares this opinion.

There are those who cherish this "infernal" weed and even cultivate it in hothouses. The much-maligned dandelion, the bane of many a gardener, is a useful plant — if you know what those uses are. Its leaves are tossed in salads, cooked like spinach and served in numerous other ways. Its roots are roasted and ground for mixture with chocolate and coffee. Its blossoms are the basis for dandelion wine.

Easily recognized by their bright yellow flowers, dandelions have deeply indented leaves and hollow stems containing a bitter, milky juice — not at all harmful.

Dandelions are perennial, reproduced by abundant spreading seeds. They're a favorite of children who blow on the seedheads to watch the tiny seeds disperse on "parachutes." Introduced from Europe long ago, the dandelion is generally found throughout North America. It is most prevalent, however, on the Pacific coast and in the northeast and north central states of the U.S. and in the eastern provinces of Canada.

The annual homeowner vs. dandelion conflict begins in early spring, but it seems to be an endless battle — with the dandelion often winning because of its long, thick taproot.

The resilient plant grows along roadsides and in meadows, pastures, highway medians, public parks and grasslands. If you're in the mood for picking, it shouldn't be difficult to find.

Songbirds eat dandelion seeds, and bees harvest the nectar to use for making honey. Except in the Northeast, where dandelion leaves are sold commercially, its popularity among humans is not widespread. Still, the weed offers a little something for everyone.

Before you get rid of those dandelions, consider their many uses.

While the leaves can be plucked anytime, they are best in the spring, before its flower blooms. Although the leaves are rather bitter, the roots are tender and much sweeter. Fall roots are much stronger and are used to make a coffee-like drink containing no caffeine.

The best dandelion salads are made with freshly picked leaves and can be seasoned like any other salad greens. Because of the inherent bitter taste to the tangy, chewy dandelion leaves, you might want to add a somewhat sweet dressing, just as you would to spinach salad.

Some people serve dandelion salad because it is chic, probably forcing it down no matter how bad it might be. Obviously, if it doesn't agree with you, there's no sense in eating it — much less serving it to guests. Old timers probably have acquired the taste more than the current generation. After all, during the Depression years people ate whatever they could get, and dandelions were plentiful.

Dandelion wine became popular because it was inexpensive to make. People still make it, but more as a tradition than anything else. Some families hand down the process as a legacy, and each generation continues to make the terrible-tasting stuff because their parents and grandparents did so. It's not a big commercial seller; you'll likely find only a recipe — then you're on your own. In England they even brewed dandelion beer.

Medicinal? The dandelion has long been on the list of home remedies for whatever ails you. Historians say that the Greeks used it to treat liver problems. Early American colonists found its broth eased digestion and worked as a mild laxative. Perhaps the bitterness had something to do with thinking it was helpful, like cod liver oil.

Dandelions are an excellent source of vitamins A, C and some B. They contain protein, calcium, iron, sodium, phosphorus and a decent amount of potassium. Best of all, they are very low in calories.

Of course, dandelions are not the only wild greens you can put on the table. The list is endless and includes mustard, chickweed, wood sorrel, curly dock, watercress, lamb's quarters, nettles, common plantain, milkweed, shepherd's purse and others. Verify your harvest before you eat it, because parts of some plants are poisonous.

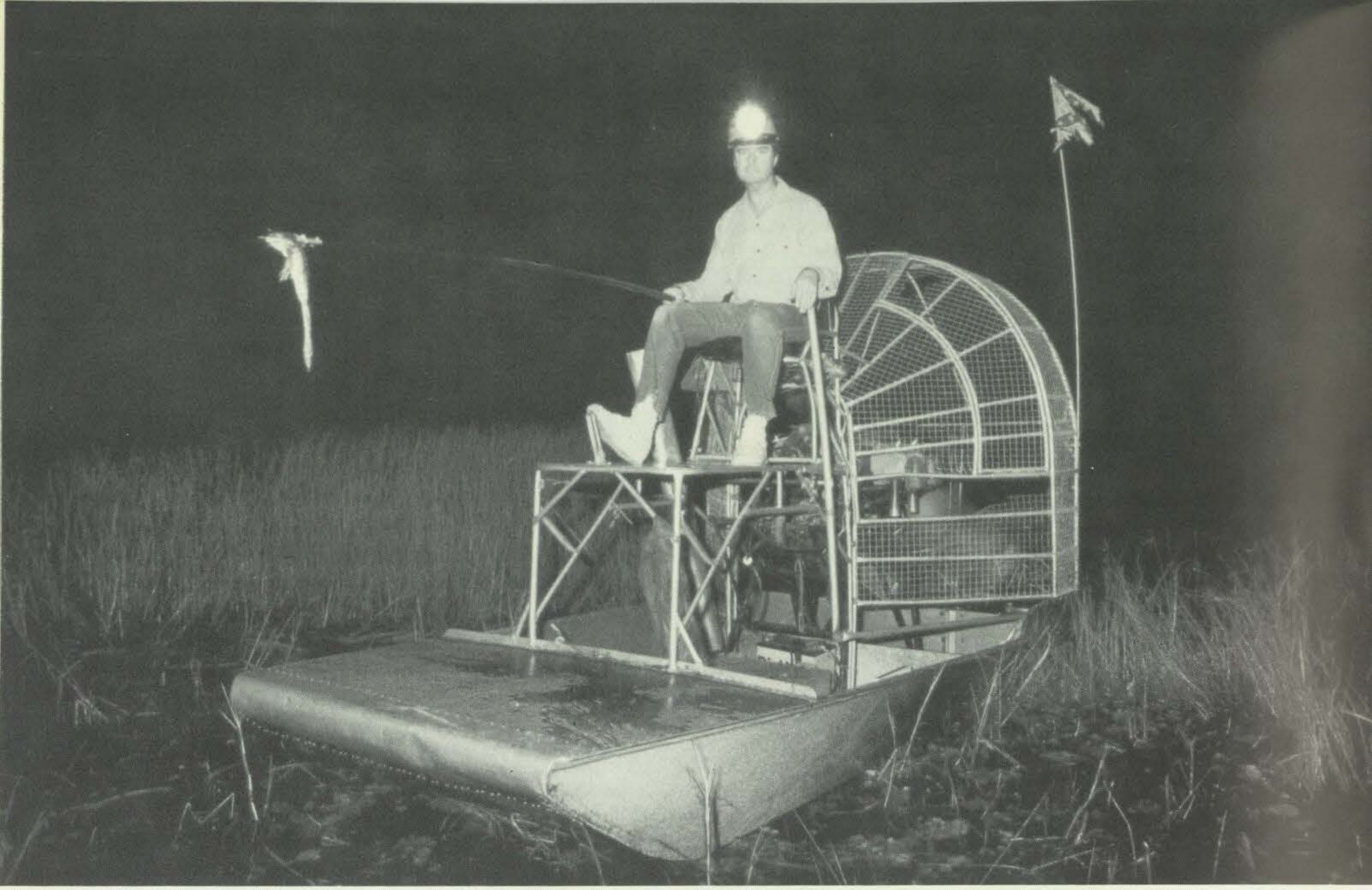
Culinary respect? The dandelion leaves you find in specialty food markets are probably commercially grown, and it is a big business in some areas. The commercial product is grown under sheets of plastic and is less bitter than what

you'd pick in your yard. More supermarkets are stocking dandelion leaves. Vineland, N.J. lays claim to being "Dandelion Capital of the World" and contends that more dandelions are grown there as salad greens than anywhere else in North America. Among the literature they sent us was a recipe booklet suggesting many different types of dandelion salads, along with a sauce, omelet, casserole, sausage, stuffing, fritters, soup, a non-alcoholic juice and — believe it or not — dandelion jello.

Whether you stew a bit of dandelion with pork, use it for home remedies, or grind the dried root to make a chicory-like brew, the dandelion is here to stay. Maybe you'll be content to just let it be, cut it with the rest of the lawn, and throw it in the mulch pile with the other clippings.

The next time you're in the yard trying to dig out the pesky dandelion, remember, it's a storehouse of nutrients, it is edible, and it's free for the picking. Who knows, you just might be trying some of the leaves in your salad or steaming them as a vegetable for your dinner plate. Bet you're at least thinking about it now.

When not in search of new adventures, free-lance writers/ photographers Tom and Joanne O'Toole watch dandelions grow at their home in Willoughby, Ohio.



OSCAR THOMPSON

Everglades Frogging

By Gary W. Schmelz

Darkness had just settled in, and the surrounding swamp was enveloped in a dense swarm of mosquitoes. Frogger John Adams and I sat quietly in an airboat, our bodies covered by the blood-seeking insects. I should have expected this when I decided to write a story on frog gigging in southwest Florida. I couldn't help but wonder if the mosquito populations were any worse when the Indians lived here centuries ago.

Adams didn't attempt to use his airboat to escape from the pesky insects. He tried that once before and had no intention of repeating his mistake. He still vividly remembers the insects pelting his body like a driving sleet storm. Hordes of them had collided with his goggles, making it impossible to see, while others were inadvertently sucked down his nose and throat.

In about an hour, the mosquito concentrations dropped to a more tolerable level, and Adams was ready to begin the expedition. He started the airboat engine, and the motor's roar quickly overcame the whirring sounds of the insects. Heading southeast, we proceeded to a spot in the saw grass prairie where frogs were likely to be.

Frogging is an integral part of Adams' life because he loves the hunt and the solitude. He learned frogging techniques from the Seminoles when he and his brother were growing up on the edge of the Everglades in Dade County. During those times, it was not uncommon to come back from an outing with more than 100 pounds of frogs.

But things are different today. The water levels have fallen dramatically in the conservation areas north of Tamiami Trail and in the Big Cypress Swamp. Now, you're lucky to gather 10 pounds of frogs in one evening.

"I guess it's like everywhere else," Adams reflected. "When more people move into an area, they begin to have an impact on the natural resources. In South Florida, this increased population has strained the water resources, which has affected our wildlife. The era of the commercial frog hunter is coming to a close. There just aren't enough frogs out there to support them."

As we neared one of his favorite hunting grounds, Adams slowed the airboat and switched on the aircraft landing light attached to his miner's helmet. Slowly he scanned the water looking for telltale yellow reflections of frogs' eyes. At first, all his light picked up were several small alligators.

"It looks like we have a little competition tonight," he told me. "Sometimes, when it gets later into the dry season, I have seen several dozen of these gators collect in a small area to feed on the concentrating populations of frogs and crayfish."

Suddenly, Adams' light spotted a pair of frog's eyes and he thrust his four-prong gig at the amphibian. His aim was accurate, and he quickly lifted the frog out of the water. Using a gloved hand, he removed the animal from the spear and dropped it down a chute into a mesh bag.

Two species of frog make up Adams' quarry: the pig frog, a southern form of the bullfrog, and the smaller southern leopard frog. Pig frogs are green above with a yellowish wash on the belly. They differ from their northern counterparts by the webs on their hind feet, which extend all the way to the tips of their toes. The pig frog gets its name from the pig-like grunt it produces. Larger individuals of the species are opportunistic feeders and have been known to consume small snakes, lizards, small turtles and even other species of frogs, in addition to insects. Pig frogs have been known to reach lengths of 7 or 8 inches.

The southern leopard frog reaches a length of 5 inches and is easy to identify by the irregularly spaced dark spots on its dorsal surface sides. This species differs from the northern leopard frog in that it has a longer and more pointed head and fewer spots on its sides. Like the pig frog, the southern leopard frog is an opportunistic feeder whose diet includes insects and any other prey it can fit into its mouth.

On this particular night the conditions were ideal for frogging: no fog and no rain for over 24 hours.

"If it had rained earlier, we wouldn't have come out tonight," Adams commented as he scanned the saw grass. "When it rains, the beads of water on the grass reflect the light, and it's extremely difficult to locate frogs. Also, when the moon is full, frogs can see you coming and they dive into the water before you can spear them."

"The era of the commercial frog hunter is coming to a close. There just aren't enough frogs out there to support them."

Adams' favorite places to frog are Conservation Area Three, just past the Collier County line, the Big Cypress Swamp and a region just outside Ochopee. Frogging is generally best in these areas from October through December, when the water begins to fall. Usually, he starts the hunt just after dark and stays until 3 or 4 a.m. If he hunts in the Big Cypress Preserve, he must obtain an off-road vehicle permit, and his catch is limited to 10 pounds.

The frogging was slow at first but improved as the evening progressed. The frogs were more abundant in the new location and occasionally, Adams moaned a sigh of frustration when he missed a particularly big one.

Frogging techniques vary according to the time of year and location. In March, for example, Adams often likes to "work the grass," running his airboat back and forth across the vegetation to flatten it out. Then he waits for 10 minutes before frogging. If all goes well, the frogs come out of the water and sit on the flattened grass.

By 2:30 a.m., we had nearly 10 pounds of frogs, so Adams turned the airboat northwest, and we headed back toward the trail. The expansive night sky, unblemished by city lights, provided a spectacular view of a star-filled universe. For a brief moment, I felt I had wings and was racing toward the edge of the world.

"*Frahnk, frahnk.*" The annoyed cries of a great blue heron drew my attention back to the swamp. We were nearing the highway and it was almost time to head for home.

At Adams' house, we devoted the rest of the evening to cleaning the frogs. Tomorrow, Adams and I will taste the rewards of our expedition. As for me, I can think of few treats that compare with a platter of frog legs.

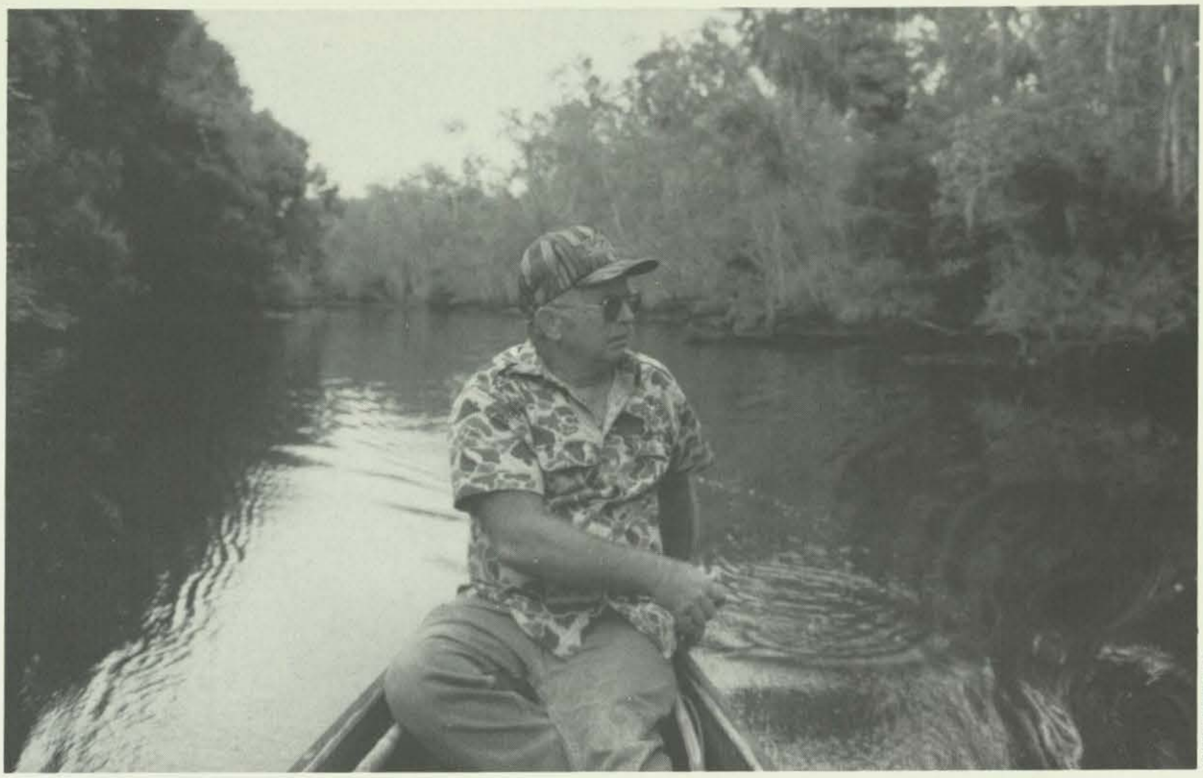
The uninitiated may enjoy the following recipe, provided by John Adams, whose culinary expertise in this area is as good as his frogging.

FRIED CROAKERS

12 large frog legs
½ teaspoon salt
½ cup all-purpose flour
½ cup Italian bread crumbs
Enough oil to cover skillet or deep fryer ½ inch.

Mix salt, flour and bread crumbs in one-gallon size plastic bag. Rinse frog legs and place still-wet legs into a bag, shaking a few at a time to ensure an even coating. Close the bag tightly and place it in the refrigerator for one hour. Fry legs until golden brown and the meat is the consistency of fried chicken when pricked with a fork. Serve with tartar sauce if desired.

Dr. Gary W. Schmelz is a marine biologist and an environmental planner who teaches at Edison Community College in Naples.



BOB MCNALLY

Urban Frog Gigging

By Bob McNally

It was an hour before sundown. The cool of evening was slowly settling on the city of Jacksonville. Cars scurried and darted along Beach Boulevard as rush hour waned.

At the Pottsburg Creek public boat ramp, on the city's south side, a few boaters were putting the finishing touches to their trailered skiffs. Cool creek water dripped from their boat hulls as they tightened tie-down straps and checked trailer lights before driving home. Two water skiers talked about the day's zig-zagging on the creek.

The day was nearly over for most of the city, even for those few who'd squeezed in some boating and fishing between quitting time and sundown. The parking lot was bustling, because it served both the ramp and a chicken restaurant catering to a famished fast-food crowd.

It was a typical summer evening scene for Jacksonville, except for the two of us launching our canoe at dusk. Donald Denmark and I drew stares as we paddled away from the ramp while everyone else was coming in.

"Bet none of those folks ever thought about frog gigging in Pottsburg," Denmark said as he arranged a pair of long frog gigs in the canoe. "That's exactly why there are so many frogs in so many creeks in and around Jacksonville and other Florida cities.

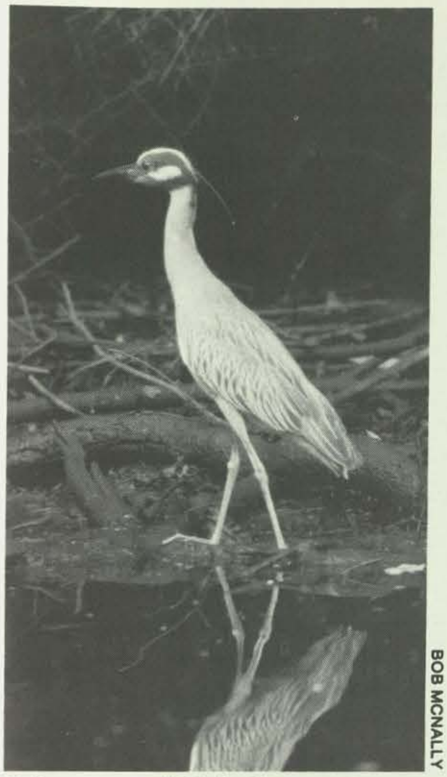
"There's a lot of wildlife and great outdoor activities available to city people, but most never really notice. That's okay by me, 'cause it leaves all the good fishing and hunting for the few who know where to look."

Denmark was interrupted by loud growling and snarling. Less than 50 yards from the boat ramp a pair of raccoons squabbled over fishing rights. Their gnashing of teeth and slashing of claws was not like the typical TV scene you'd expect of "cute" raccoons.

Finally, one of the 'coons made a hasty retreat, while the victor went back to prowling the bank for food.

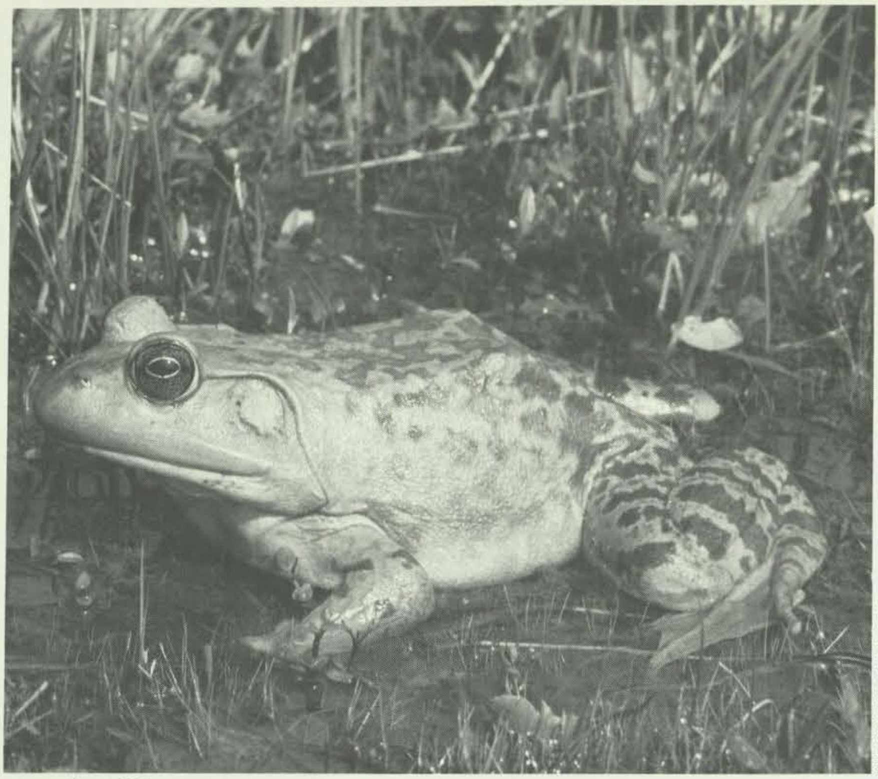
"You see that sort of stuff all the time while frog gigging on this type of creek," explained Denmark, a Jacksonville native and city fireman. "You regularly see gators, big ones, and nutrias — those big rat-like animals. Most people in Jacksonville don't know we have nutrias, but there are plenty in the creeks, especially over on the west side.

"You see owls, ducks and herons, and sometimes fish jump right into the boat. One night I got attacked by a kingfisher that wouldn't stop diving at my head. I finally figured the bird was flying at my headlamp, so I turned it off and the bird went away. For a while it was kinda scary with that bird, 'cause of that big, powerful beak."



BOB MCNALLY

Yellow-crowned Night Heron



LEONARD LEE RUE III

Female Bullfrog

When the sun sets and mosquitoes fly, it's a special time for adventurous outdoorsmen.

Darkness slowly settled over Pottsburg, and as we silently paddled away from the ramp, the creek-side trees formed a lush canopy overhead. The trees offered a kind of sheath to the urban trappings we had left only a few hundred yards behind.

This was the dark side of Pottsburg Creek — an otherwise wide world of after-hours wildlife in the heart of Jacksonville's concrete jungle. We were seemingly in another world.

"You never know what you'll see or hear in these creeks," Denmark said with a smile only a long-time urban frog stalker has.

We paddled up the creek for 30 minutes. Denmark wanted to get as far upstream as possible, since that's where most of the biggest frogs are.

"You got to get away from salt water (fed from the nearby tidal St. Johns River), and you want high banks that have lots of overhanging brush and cover for the frogs," he explained.

"Everything eats frogs — birds, 'coons, fish and people. So the frogs need cover. They don't last long on broad-banked creeks with big mud bars 'cause they're too vulnerable to predators. Some of the best places I've found for frogs are tiny creeks so small a canoe can barely fit. I guess some of 'em are really jus' drainage ditches."

"On some of the little creeks you could gig frogs by walking along the bank, but most people don't for fear of stepping on water moccasins. You really don't see too many snakes, but I used to gig a borrow pit in Jacksonville that was so full of moccasins you came up on one most every time you saw a bullfrog," he continued.

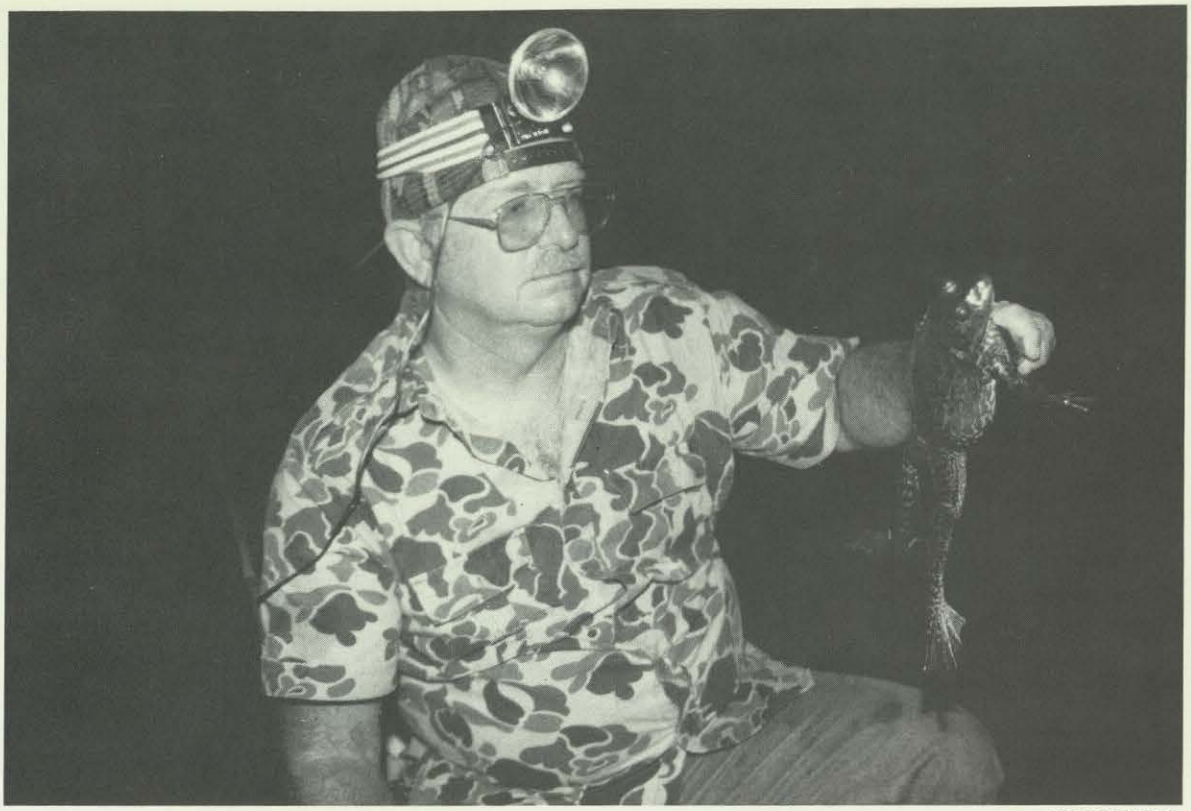
"It's best to use a canoe, because good frog creeks are narrow, and you've got to be able to navigate well to work close to frogs to gig 'em. It's so quiet, so different on the creeks at night, you feel like Tom Sawyer or Huck Finn when you're out here."

We turned on our headlamps, powered by powerful six-volt batteries that threw a remarkably long beam down the creek. Denmark paddled at the stern while I manned the gig. We hadn't gone far with the headlamps on when Denmark spotted a small bullfrog on the bank. He silently eased the canoe close, and I thrust the 8-foot-long gig through the frog.

We rarely went more than 30 yards up the creek without seeing a frog's eyes reflecting in the flashlight beams. Usually a frog would sit still with the light on it as we eased close, then when the gig was 6- to 8 inches away, a quick thrust usually found its mark.

We missed a lot of frogs, but in just a couple of hours we had 18 big hoppers in the cooler.

Anyone looking for a frog-leg dinner can find three suitable species in the creeks of Jacksonville. The largest is the bullfrog, growing to a maximum length of 20 inches and weighing several pounds. Some creeks have the pig frog, which is slightly smaller, but just as delicious.▷


BOB MCNALLY

Smallest of the three, but no less tasty, is the leopard frog.

Over several hours on Pottsburg Creek we saw more than a dozen raccoons and heard barred owls hooting and chuck-will's-widows calling. We saw many pairs of eerie, red-glowing gator eyes. One gator was so big I hesitate to describe the gap between its eyes.

We came so close to a wood duck hen and her brood of 10 ducklings on a mid-creek sandbar that we backed away from her for fear she'd spook into Pottsburg's deeper water, where they'd be vulnerable to gators. She'd picked the perfect place for solitude, because the creek's bank was crawling with raccoons, which would eat her brood as quickly as the gators would.

Yellow-crowned night herons roosted in the darkness of trees along the bank. Mullet jumped and gar swirled the surface. It was hard to believe that this wild place could be hidden so close to the hustle and bustle of Jacksonville.

"There are creeks like this all over the city, all over Florida," said Denmark with a smile. "And most never have people on 'em after the sun sets. It's like you have the creeks all to yourself — with Tom and Huck along, too, of course."

Frog Gigging Gear:

The Gig: Frog gigs are available in many tackle stores. They're made of metal and have several long prongs with barbs. It's a good idea to have at least two gigs along for a night on the water, because they commonly get broken when jabbing at frogs in the dark where logs and stumps abound. Gigs are usually mounted to a long pole. An 8- to 10-foot pole is perfect, with stout bamboo a good choice because it's rigid but lightweight. Aluminum poles make good gigs, too. They can be fashioned easily from old swimming pool maintenance equipment.

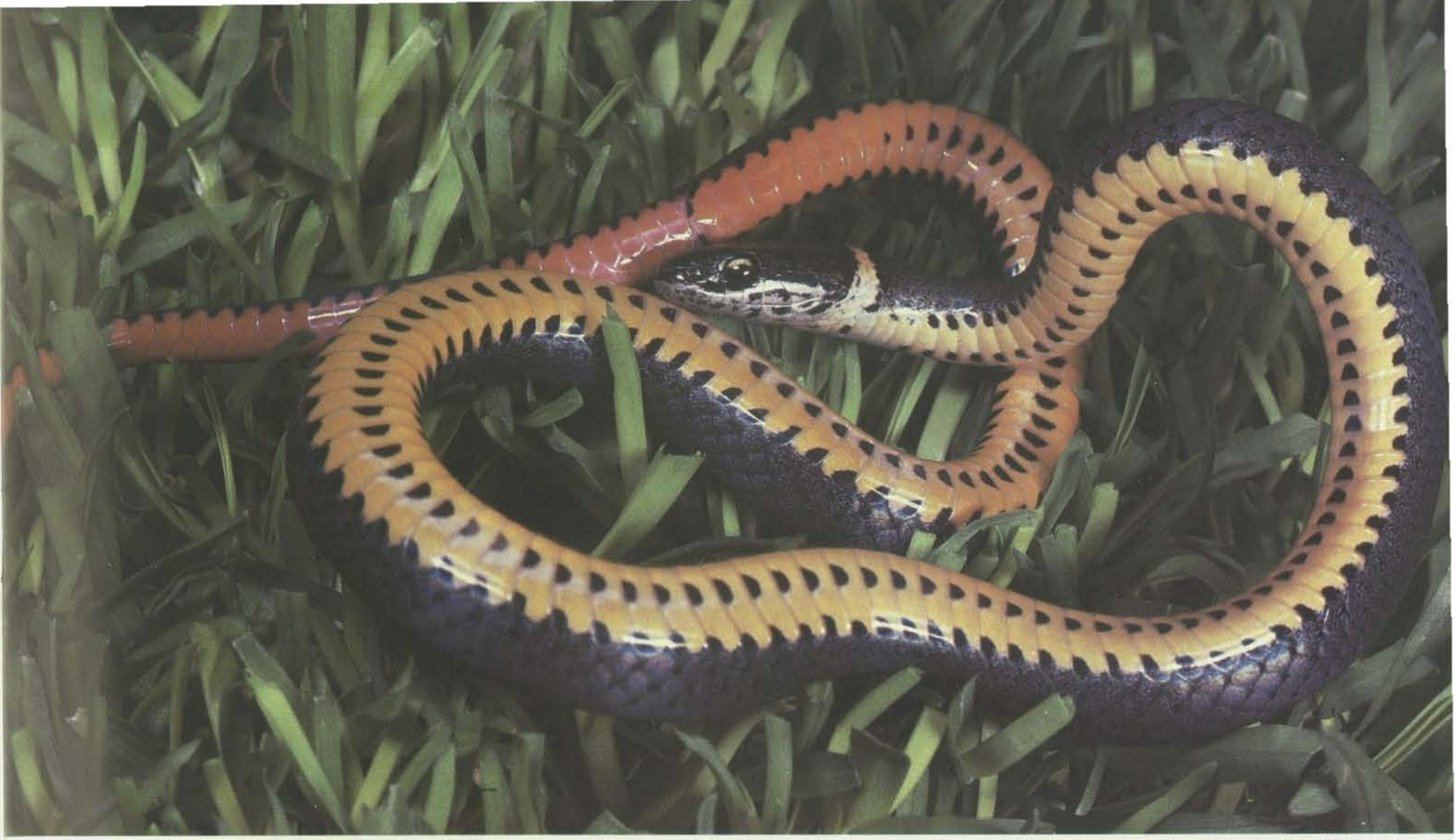
The Light: While a large, powerful "Q-beam" type light or hand-held flashlight could be used by frog giggers, the best light is a commercially available one that's like a coal miner's lantern. The light is fastened to an elastic head band wired to a six-volt battery.

The Boat: Small skiffs or johnboats can be used for navigating small creeks and canals, but a sleek, silent, easily maneuverable canoe is best. If you don't want to paddle the canoe, try a small, 12-volt electric motor.

Extra Gear: Insect repellent is a must, but there are surprisingly few biting bugs on tidal creeks in full darkness, even with flashlights on. It's good to keep a cooler with cold drinks and another one for storing frogs. Be sure to bring a small knife and pliers for cleaning and skinning frogs. Place a large rag or two over the gig prongs to prevent accidents at night, especially in the boat. Some giggers place a large sponge or piece of soft wood on the sharp prongs.

License and Limit: No license is required for taking frogs for noncommercial purposes. There is no limit on frogs; however, it is illegal to take or possess any frog classified as threatened or endangered.

Bob McNally is the outdoors editor for the ***Florida Times Union*** *newspaper and a regular free-lance contributor.*



SOUTHERN RINGNECK SNAKE (Diadophis punctatus punctatus) JIM MERLI

Florida's Nonvenomous SNAKES

By Craig N. Huegel and David G. Cook

Depending on your point of view, Florida is either blessed or cursed with a rich diversity of snakes. Our 44 species of snakes are found in every conceivable habitat, from coastal mangroves and salt marshes to freshwater wetlands and dry uplands, and many species thrive in residential areas. Therefore, you can expect to encounter snakes occasionally wherever you live or travel in Florida.

Many people have negative attitudes toward snakes because of superstitions or folklore that have no basis in fact. In reality, snakes cause few problems, and many are beneficial in reducing populations of rodents and other pests. Since just six of Florida's snake species are venomous, and only four of these are widespread, the snakes you encounter are most likely to be nonpoisonous. This article introduces some of the most commonly seen nonvenomous Florida snakes.

What are snakes, anyway? Far from being slimy and wormlike, snakes are reptiles and, like lizards, turtles and crocodilians, are covered with hard, dry scales. They are bony, too, and the secret to their slithering ability lies in the complex coordination of ribs, muscles and broad belly scales that propel them fluidly in search of food or shelter. Snakes are strictly carnivores; they must find, subdue and eat other animals to survive. The ways they accomplish this without the benefit of arms and legs are awe-inspiring.

While having no legs is an obvious, common characteristic, snake species differ in many ways, such as food and habitat preferences, behavior when confronted and reproductive habits. About half of Florida's snakes give birth to live young while the others lay eggs. The number of young or eggs differs greatly among species, but most newly born or hatched snakes appear by late summer.

There are just a few species that are commonly seen in developed areas, although any snake may occasionally be found in urban settings. By recognizing common nonvenomous snakes and understanding something of their habits, you can take a more relaxed attitude toward them and appreciate them as an integral part of Florida's wildlife. ▷

Racer and Coachwhip

One of Florida's most familiar snakes is the "blacksnake" or, more properly, the southern black racer. Aptly named for its coloration and speed, the black racer is common in a wide variety of habitats, most frequently in brush- or shrub-covered areas near water.

The adult racer is a slender, satiny snake, plain black or slate gray with a white or gray chin and throat. Maximum length is about 70 inches, but most are 36-60 inches long. Persons otherwise familiar with snakes are often "stumped" by young black racers, which are colored very differently from the adults. For a year after hatching, racers are slate gray with regular rusty brown blotches running down the back. Black racers shouldn't be mistaken for the threatened eastern indigo snakes, which also are large, shiny and black. Indigos are much heavier, have a rusty or red chin and throat, and are much more local in distribution.

Black racers are nervous, irritable and fast-moving. When given a chance to escape, they generally do so very quickly. However, racers, especially juveniles, will not hesitate to bite when cornered. They also vibrate their tails when they feel threatened, causing some people to mistake them for rattlesnakes.

Unlike many snakes, the black racer hunts actively during daylight hours, one reason why they are frequently noticed. The eyes, with their rich, chestnut-brown irises, are large in relation to its head, betraying the racer's keen vision.

Part of the racer's success is due to its wide diet; they have been referred to as "slithering garbage pails." Racers capture a tremendous variety of animals, including other snakes, lizards, frogs, birds, rodents and insects. While hunting in open areas, the racer often raises its head high above the ground, cobra-style, to survey its surroundings better.

Many of these characteristics are shared with the racer's larger cousin, the eastern coachwhip. This snake can be over 8 feet long and frequents dry, open habitats including pine flatwoods, sandhill and scrub. It's an active hunter and quick to bite in self-defense. Typically, its head and front quarter of the body are black to dark brown, which fades to light tan on the remainder of the body and tail.

Rat Snakes

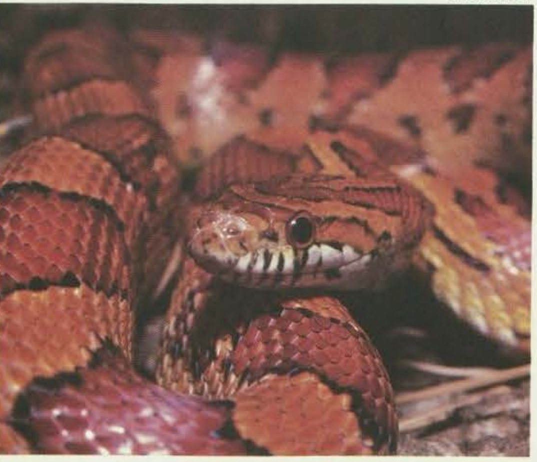
There are only two species of rat snake native to Florida, but they are so variable in color and pattern you'd think there were many more. The red rat or "corn" snake is the only large, red-orange snake likely to be encountered in developed areas of Florida. Because of its color, this snake is frequently mistaken for the dissimilar, venomous copperhead. Actually, the copperhead is rare in Florida and found only in the heavily timbered counties flanking the Apalachicola River.

The red rat snake varies in color but usually is some shade of yellowish-tan to orange, with a row of large, dark-edged red or rusty blotches down the center of the back. The black-and-white belly resembles a piano keyboard.

The other species of rat snake has several names to match its appearance, which varies in different parts of the state. Young of this species are gray with irregular darker gray blotches on the back. In the panhandle, the adults retain this color pattern and are known as the gray rat or "white oak" snake. Throughout most of the peninsula, however, the adults are orangish with four narrow, brown stripes running the length of the body. These are commonly called yellow rat or "chicken" snakes.

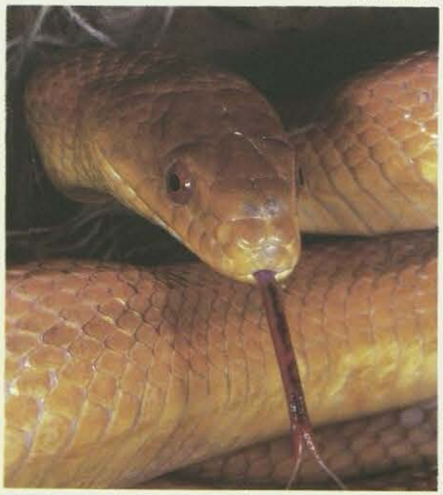
The red rat snake may grow to a length of 72 inches, but averages 30-48 inches. The gray and yellow rat snakes may reach a body length of 84 inches, but those most commonly seen are 42-72 inches. Both species are found throughout Florida in almost every habitat, but are shy and secretive, spending most of their time in trees, under brush and mulch piles, or inside old buildings and other structures. Rat snakes are the best climbers of Florida's snakes, thanks to powerful constricting muscles and specially edged belly scales that they press

JIM MERLI



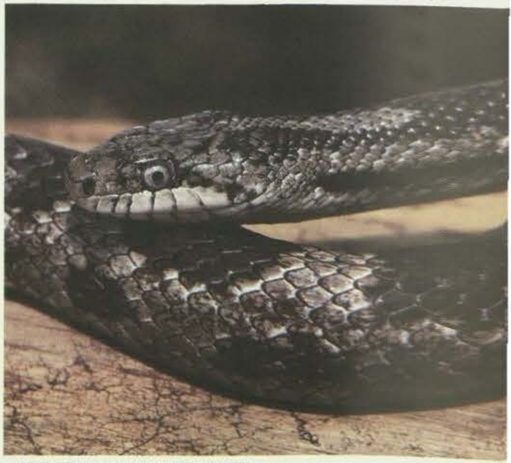
RED RAT or CORN SNAKE
(Elaphe guttata guttata)

JIM MERLI

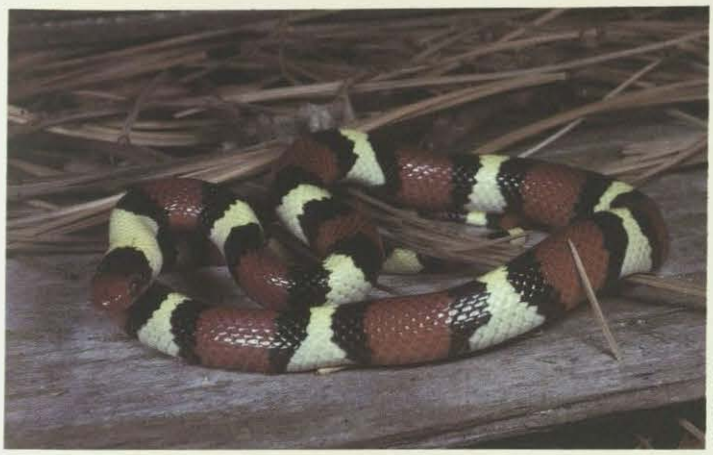


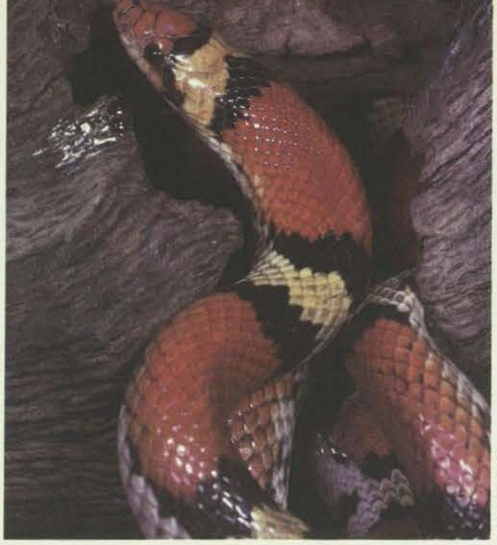
YELLOW RAT SNAKE
(Elaphe obsoleta quadrivittata)

DALE JACKSON



GRAY RAT SNAKE
(Elaphe obsoleta spiloides)


JIM MERLI


JIM MERLI

Although the scarlet kingsnake (l) (Lampropeltis triangulum elapsoides) and northern scarlet snake (r) (Cemophora coccinea copei) resemble the venomous coral snake, they are harmless. In contrast, the coral snake has a black snout, not red. Its red bands are bordered by yellow, not black.

into tiny irregularities in order to climb vertically up tree trunks and other surfaces.

Young rat snakes feed mostly on lizards and frogs, but adults graduate to rodents and birds, which they kill by constriction. They are quite useful in controlling rats and mice. In late spring to early summer, females lay up to 30 eggs, which hatch in mid- to late summer. Rat snakes tame easily, but will defend themselves aggressively when cornered. When threatened, they may also vibrate their tails rapidly.

Kingsnake

The kingsnake is a large, powerful snake found throughout mainland Florida in a variety of habitats, often near water. Although normally between 36 and 48 inches, it is known to reach 82 inches in length.

The kingsnake color pattern varies almost as dramatically as that of the rat snakes. In north Florida, most are the eastern kingsnake variety, which is shiny black with narrow crossbands of white or light yellow. Most central and south Florida specimens are the Florida kingsnake variety, with many indistinct crossbands on a yellow and black "salt and pepper" background. Some populations are intermediately speckled or blotched, but all varieties have the distinctive kingsnake chin marked by black and yellow.

The kingsnake is an egg-laying constrictor, feeding primarily on rodents, birds and reptiles. Its reputation as the "king of snakes" probably stems from its fondness for eating other snakes, including rattlesnakes and other pit vipers, whose venom does not harm the kingsnake. Persons not keen about having many snakes on their property should be careful to safeguard their local kingsnakes!

Hognose Snakes

The eastern and southern hognose snakes are two of Florida's least offensive, yet most maligned nonvenomous snakes, due to their appearance and exaggerated defensive stunts. Hognose snakes are found in upland habitats and prefer dry, sandy woods and fields. The eastern hognose is found throughout mainland Florida while the southern hognose occurs only in the northern half.

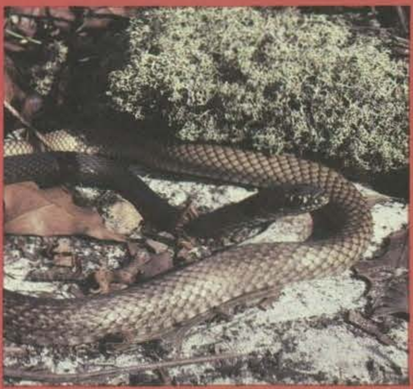
Both hognose snakes are rather stout-bodied and have alternating brown and tan or yellow blotches, although some eastern hognoses are solid black above, with no sign of pattern. Young hognose snakes, which hatch in summer or fall, are gray with black markings. Eastern hognoses may reach 45 inches, but commonly are 20-23 inches long; the southern hognose never exceeds 24 inches. The peculiar upturned snout, which is most dramatic in the southern hognose, is specially designed for digging out toads, their major prey.

Many types of nonvenomous snakes are killed by Floridians each year out of fear or ignorance, but hognoses, because of their defensive antics, are more likely to be targeted. When alarmed, hognose snakes will hiss, puff and jerk about, raise their head, and flatten their neck into a convincing, cobra-like hood. They may even strike but don't open their mouth. If this doesn't frighten away their attacker, they then thrash about, spew out a foul-smelling musk, roll over, and play dead, often with the mouth open and tongue dragging on the ground. Despite the hognose's dramatic display to ward off attack, the strategy backfires with people and the harmless snakes are often killed.

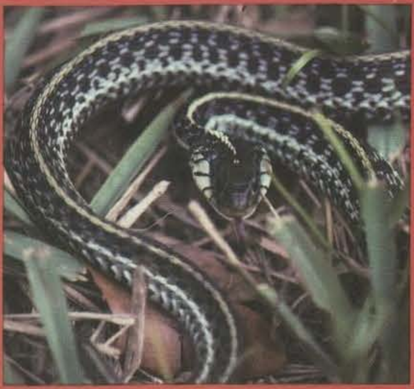
In contrast, the smaller but similarly patterned pygmy rattlesnake will coil, strike and bite savagely if molested. Pygmy rattlers do not have the sharply upturned nose of the hognose snakes and possess a tiny rattle that makes a barely audible buzzing sound.

Garter and Ribbon Snakes

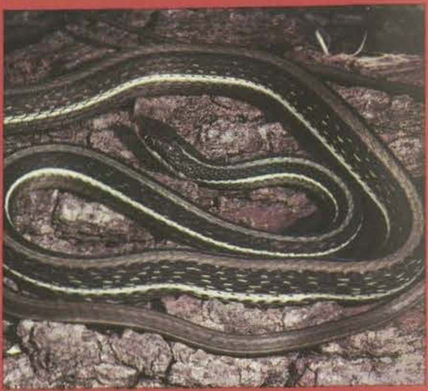
In Florida, any snake you could describe as "striped" is nonvenomous, and the most familiar are probably the garter and ribbon snakes. These closely related species are common in a variety of habitats, mostly near water or wet areas. Garter snakes are quite variable in color. They may be black, brown or greenish on a ▷



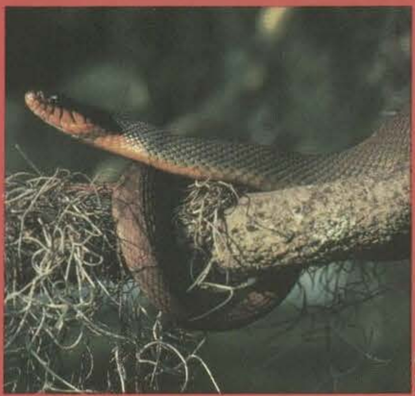
EASTERN COACHWHIP
(Masticophis flagellum flagellum)



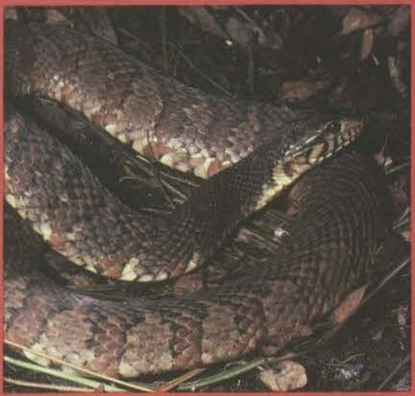
GARTER SNAKE
(Thamnophis sirtalis)



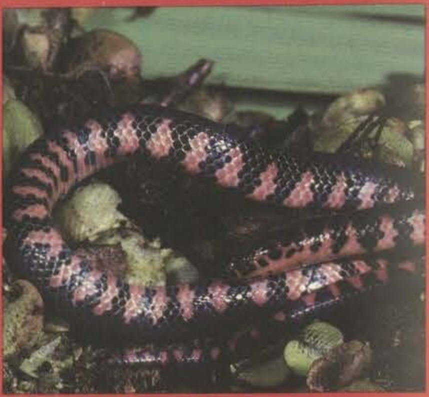
RIBBON SNAKE
(Thamnophis sauritus)



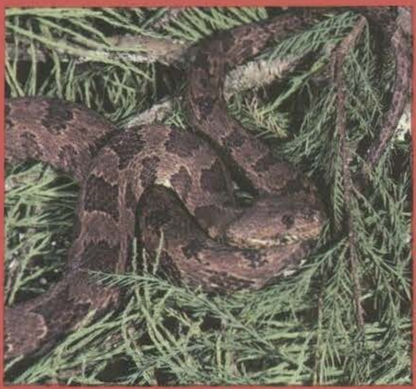
REDBELLY WATER SNAKE
(Nerodia erythrogaster erythrogaster)



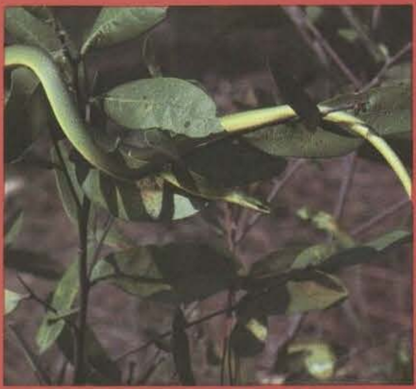
BANDED WATER SNAKE
(Nerodia fasciata fasciata)



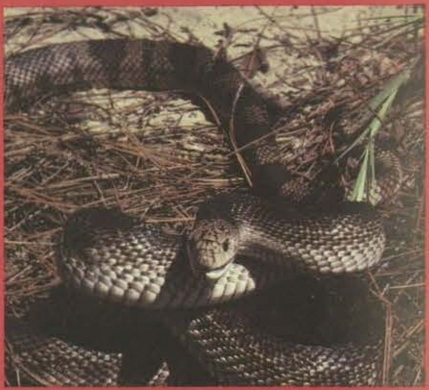
EASTERN MUD SNAKE
(Farancia abacura abacura)



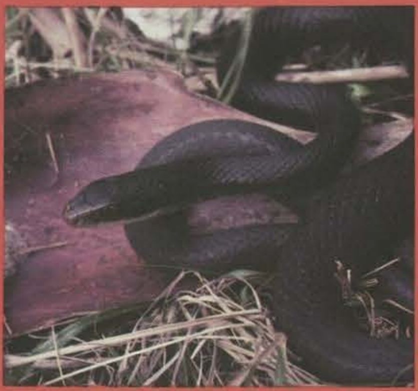
BROWN WATER SNAKE
(Nerodia taxispilota)



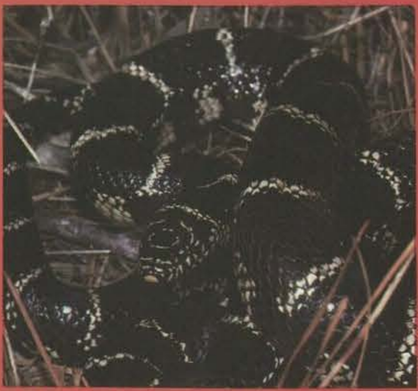
ROUGH GREEN SNAKE
(Opheodrys aestivus)



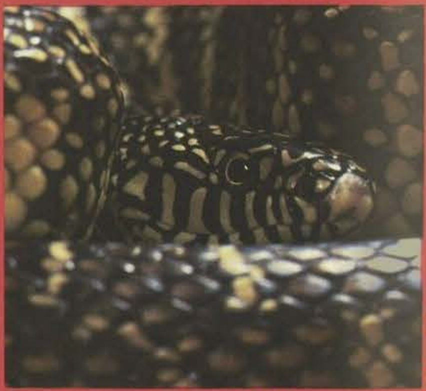
FLORIDA PINE SNAKE
(Pituophis melanoleucus mugitus)



SOUTHERN BLACK RACER
(Coluber constrictor priapus)



EASTERN KINGSNAKE
(Lampropeltis getula getula)

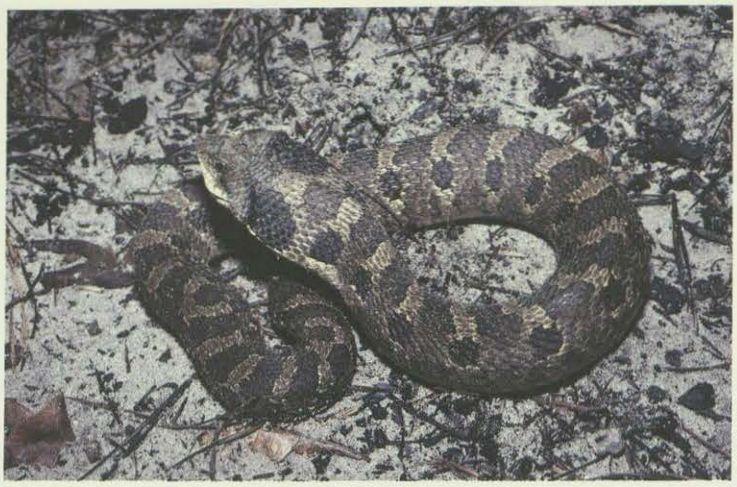


FLORIDA KINGSNAKE
(Lampropeltis getula floridana)

background checkerboard of small black spots, and most individuals have three obvious stripes on the back and sides running the length of the body. These stripes may be green, blue, yellow or tan. Garter snakes are fairly slender; their maximum length is about 48 inches, but most are 18-26 inches.

Ribbon snakes are colored similarly to garter snakes, but usually lack the background checkerboard pattern, and the back stripe may be faint or absent. As the name implies, ribbon snakes are exceedingly slender, and don't grow longer than 40 inches. They are excellent climbers, often taking refuge in low shrubs.

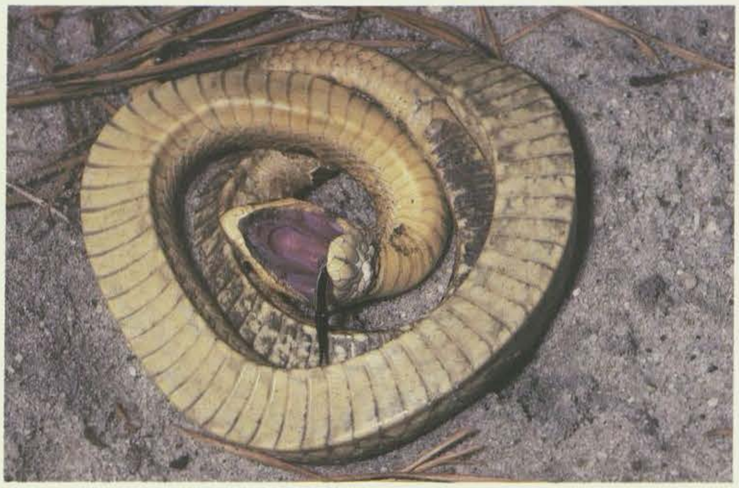
Large garter snakes may eat small rodents, but their common diet consists of worms, minnows, frogs and toads. They often are quite aggressive when cornered and expel a foul-smelling musk when handled. Ribbon snakes feed mostly on small fish, frogs and lizards. They are quick-moving and nervous, preferring to flee when given any chance to do so. Ribbon snakes rarely bite, but do release a strong-smelling musk when handled. Both species bear live young.



JIM MERLI

EASTERN HOGNOSE SNAKE (Heterodon platirhinos) in defensive posture.

EASTERN HOGNOSE SNAKE playing dead.



JIM MERLI

Water Snakes and "Moccasins"

Some people mistakenly call all snakes they see near water "water moccasins," but only the cottonmouth water moccasin is venomous. Most of the snakes seen along Florida rivers and lake edges are harmless water snakes. There is ample room for confusion, however, since both cottonmouths and water snakes may be very dark with rough scales, may attain lengths over 4 feet, and can be relatively thick-bodied.

Water snakes are distinguished from poisonous cottonmouths by their behavior and their "face." Cottonmouths tend to stay put when encountered, often coiled and, if sufficiently harassed, will give the open-mouth display that gives them their name. Harmless water snakes, which commonly bask stretched out on tree branches over water, are more likely to seek immediate escape into the water when encountered. Also, cottonmouths usually swim with their entire body on top of the water, whereas water snakes are more likely to escape underwater or swim with only their head at the surface.

The face of a cottonmouth has a more "sinister" appearance due to the broad scale that protrudes like a shelf above each eye. Its head has an angular, "chiseled" aspect, and Florida cottonmouths always have a dark brown band that runs across the side of the head through the eye. The nonvenomous water snakes have no protruding scales over the eyes, so they appear more "bug-eyed," and the head typically has a more rounded aspect.

Four of the largest and most commonly seen water snakes include the plainbelly, banded, brown and Florida green water snakes. The plainbelly water snake frequents the banks of large rivers in the panhandle and northern peninsula (Suwannee River drainage), whereas the other three are common in rivers, lakes and ponds statewide. All are proficient hunters of fish, frogs and other aquatic animals and have long teeth for holding slippery prey. Thus, harmless water snakes, notorious for fiercely defending themselves, typically bite and draw blood when captured. Although nonvenomous, such bites are painful and, like all animal bites, should be washed thoroughly to avoid infection. Water snakes bear their young alive and sometimes abundantly; Florida green water snakes can have litters as large as 100! ▷

Ringnecks and Other Little Snakes

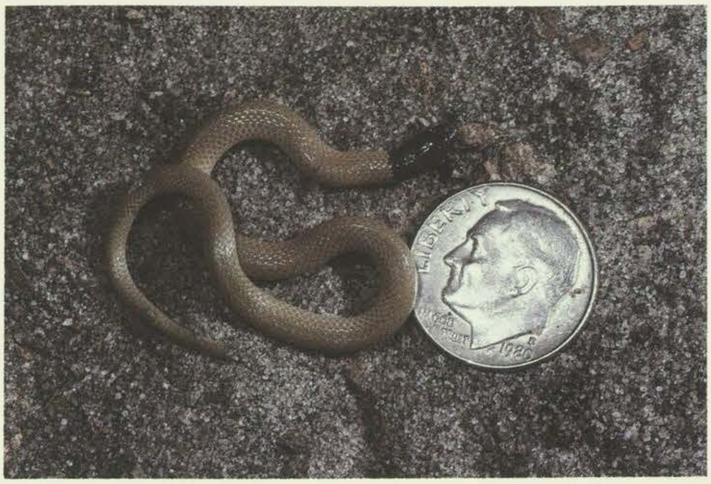
All the snakes discussed so far are relatively large, but the most abundant snakes in Florida are seldom more than 12 or 14 inches long. Although common in most gardens and backyards, these diminutive snake species are easily overlooked due to their secretive habits.

A good representative is the southern ringneck snake, a distinctive little snake that is shiny black or dark gray above, with a bright orange or yellow neck ring. The belly is a startlingly bright orange or yellow with a row of black half-moons down the center. Ringnecks spend most of their lives under mulch or leaf litter, where they feed on small lizards, earthworms, slugs and salamanders. They are fairly social and often are found in groups of two or three. The ringneck is one of the least aggressive animals in the world and almost never attempts to bite people. Even if it should try to bite, its mouth and teeth are too small to cause a wound. When seriously threatened, ringnecks defend themselves by thrashing about and expelling musk. The four to seven eggs laid in midsummer hatch 40-50 days later into tiny snakelings, only 4 inches long!

What To Do When You See a Snake

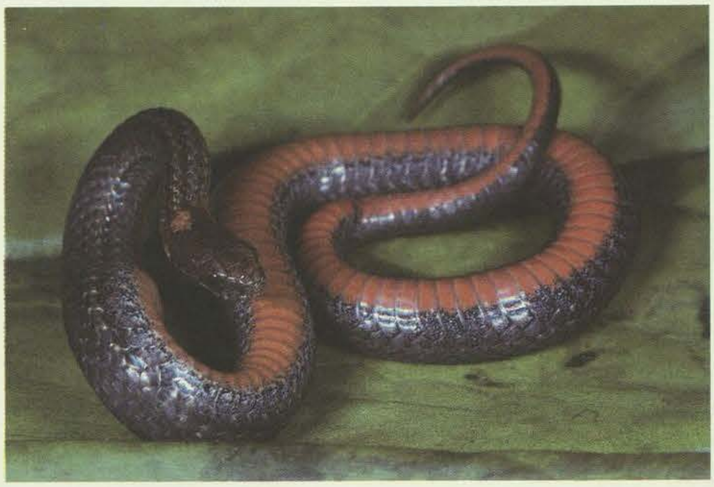
What should you do when you come upon a snake? Just stand back and observe it. Snakes don't purposefully position themselves to frighten people. They'd much rather avoid encounters and usually will flee. You can try to figure out what kind it is by using this article or one of the other references listed.

There is no good reason to kill a snake except in the unlikely situation of a poisonous snake posing immediate danger to people or pets. Snakes usually bite people only if they are molested; it's their only means of self-defense. Even a poisonous snake in the woods or crossing the road poses no threat and should be left alone. Also, most larger snakes travel in large areas, so one you see in your yard today may be far away tomorrow.


JIM MERLI

FLORIDA CROWNED SNAKE (Tantilla relicta)

REDBELLY SNAKE (Storeria occipitomaculata)


JIM MERLI

Other small but abundant Florida snakes include the Florida brown, Florida redbelly, smooth earth, rough earth, pine woods and Florida crowned snakes.

For Further Reading

A brochure with photos and information about the six poisonous snakes in Florida, titled "*Florida's Venomous Snakes*," is available from regional offices of the Game and Fresh Water Fish Commission. To find out more about the snakes in our area, we recommend the following books:

A Field Guide to the Reptiles and Amphibians of Eastern and Central North America. Third edition. By Roger Conant and Joseph T. Collins. 1991. Houghton Mifflin, Boston (Peterson Field Guide Series). 450pp, $16.95.

The Audubon Society Field Guide to North American Reptiles and Amphibians. By John L. Behler and F. Wayne King. 1979. Knopf, New York. 744pp, $13.50.

Handbook of Reptiles and Amphibians of Florida, Part One: The Snakes. Second edition. By Ray E. Ashton and Patricia S. Ashton. 1988. Windward, Miami. 176pp, $12.95.

Snakes of the Southeastern United States. By Jeffrey J. Jackson. 1983. Cooperative Extension Service, University of Georgia, Athens. 112pp, $2.50.

Dr. Craig N. Huegel is the urban wildlife specialist for central Florida. The Urban Wildlife Program is a cooperative project between the Institute of Food and Agricultural Sciences and the Commission. David G. Cook is a biologist in the Commission's Nongame Wildlife Section.

EL LAGARTO

By Michael Wisenbaker

TOM ULRICH

Having lived on our planet for 150 million years, these powerful, toothy reptiles are awe-inspiring — and worthy of respect. Spanish explorers were the first Europeans to observe American alligators, which they called *el lagarto*, "the lizard."

▷

As a native of the Deep South, I rarely pay heed to the big, lazy lizards that hang out at some of my favorite haunts. I share their liking for wild, remote places. The farther away I get from two-legged creatures bent on taming the whole state, the better. So, I sometimes haul my canoe to the Gulf of Mexico to probe the creeks and estuaries that pour into Apalachee Bay south of Tallahassee. I especially relish poking around the swampy realms between the salt marshes and wooded uplands.

One summer day I rounded a sandy finger of land west of the St. Marks River and slid into a shallow inlet. Oyster shells scraped the canoe as it skimmed over them at low tide. Mullet occasionally launched themselves out of the water. Stingrays darted for safety as the boat's shadow leaped ahead. While gulls and terns scrapped for food, I glided over the vast sea grass flats with a warm breeze at my back.

It was a relief to leave the choppy bay for a sheltered tributary. Cordgrass and black needlerush buffered the area between the creek and its tree-lined banks. As I pushed upstream in the twisting channel, I saw where gator slides parted the grasses along the shore. Herons and egrets squawked in protest as I floated by. Rails, hiding in the marsh, startled me with their sudden cackling. Fiddler crabs scurried into burrows lining the rank mud banks.

Several cypress trees festooned with Spanish moss signaled a change from brackish to fresh water. The creek was now a clear, blue run, fixed in an ivory limestone channel. I followed one dwindling branch until it abruptly ended. A peek into the limpid liquid at its head revealed a spring vent. I secured the canoe and hastily donned my snorkeling gear. As I tumbled out of the boat, the cool water made me gasp. Something bolted into the spring's small cave, leaving a trail of silt in its wake. Not knowing what kind of troll I'd upset, I reluctantly climbed back into the boat.

I left the tiny spring and soon spotted another rocky channel that I'd missed earlier. It was wider and deeper, so I decided to follow it. After paddling a short way, I tied up to a bald cypress and grabbed my mask, fins and snorkel. Swimming just over the bottom, several large, fat blue crabs raced into crevices as I finned near them. I picked up some alligator scutes (hard, bony plates with pinched ridges that cover the critter's back) and a few fossilized shark teeth.

I was intrigued by the source of the strong current, so I flopped back into my canoe and wended upstream. A dense canopy of cabbage palms, loblolly pines, hardwoods and shrubs shaded the run. As I traveled upstream, I had to hop out and drag the boat over tree-falls and sand bars. I had no choice but to portage around several huge trees downed by the recent hurricanes. By this time I was panting like a dog and wondering about my sanity.

Suddenly the run enlarged. I sensed the creek's source was near. As I struggled past the last few sunken logs and rounded a sharp bend, a magnificent, air-clear spring loomed ahead. My efforts had not been in vain.

I savored the spectacle. A barred owl peered down from its perch,

The cypress trees marked where the stream forked into two distinct spring runs.

MICHAEL WISENBAKER

El lagarto reigns supreme throughout Florida's marshes and swamps.

LYNN STONE

Curious but cautious, I surfaced for air and dived again, this time toward the other end of the fallen tree. When I reached the bottom, the toothy grin of an alligator greeted me.

and several gar hovered near the spring's surface. I decided to rest for a few minutes though voracious insects were devouring me. My heart was still pounding from the arduous journey, but the sight of the blue fluid bubbling from deep beneath the earth renewed my spirit.

I couldn't wait any longer. I took several deep breaths and plunged about 35 feet beneath the surface. I noticed some silt in the water. My delight quickly turned to disgust when I saw a jagged piece of metal sticking out from the edge of a tree-fall in the basin. I questioned why some dim-wit would dump trash in a pristine spring.

I took another deep breath and dived down to remove the metal. But, as I got within a couple of feet of it, something didn't seem right. Curious but cautious, I surfaced for air and dived again, this time toward the other end of the fallen tree. When I reached the bottom, the toothy grin of an alligator greeted me. Now I was glad I hadn't reached for the "metal" since it was his behind. It's not wise to harass an alligator, or even to swim with one, so I didn't hang around.

The large reptile appeared to be about 6 or 7 feet long and didn't seem to want to eat me. Apparently, when it saw me coming, it was spooked and tried to hide under the brush pile. Maybe that's what stirred up the silt when I first arrived.

I slowly surveyed the spring, while keeping a cautious eye on what the early Spanish explorers described in their accounts of the New World as *el lagarto* — the lizard. In the 1800s John Muir, father of our national parks, gave this view of these living dragons:

> *"Many good people believe that alligators were created by the Devil, thus accounting for their all consuming appetite and ugliness. But doubtless these creatures are happy and fill the place assigned them by the great Creator of us all. Fierce and cruel they appear to us, but beautiful in the eyes of God. They, also, are his children, for He hears their cries, cares for them tenderly, and provides their daily bread." (excerpted from* ***Thousand Mile Walk to the Gulf,*** *published in 1916, two years after Muir's death)* ▷

Although we shouldn't fear Florida's wild creatures, we should accord them respect — especially these big reptiles. Their mouths can easily crush the shell of a big turtle or crunch the bones of a large mammal. A gator's diet has been described by E.A. McIlhenny in *The Alligator's Life History* as consisting "of every living thing coming into range of its jaws that flies, swims, or crawls that is small enough for it to kill." No person can match the brute strength of these giant reptiles.

Just 30 years ago, alligators were on the brink of extinction because of the market value of their hides. Strict laws protecting them have resulted in a remarkable recovery. Unfortunately, with Florida's relentless growth, confrontations with people increase as we invade the gator's territory. The Florida Game and Fresh Water Fish Commission's Nuisance Alligator Program receives more than 10,000 complaints per year.

Human/alligator conflicts rarely result in attacks; still, such encounters should not be taken lightly. To date, the Commission has documented 128 alligator attacks; five of those were fatal.

There are several common-sense precautions we can take to ensure our safety:

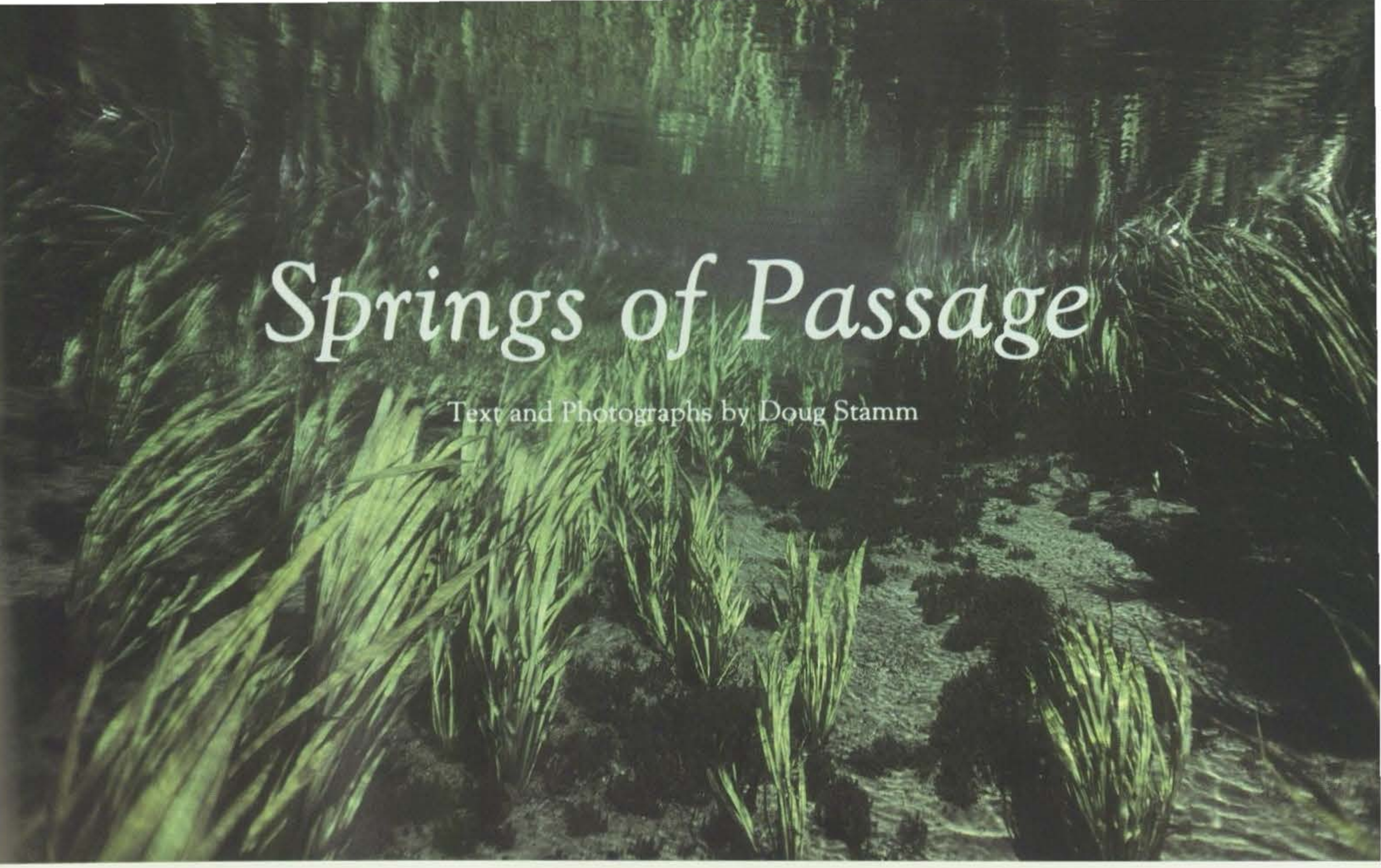
- Do not feed alligators. It is illegal and causes them to lose their fear of humans.
- Do not throw fish scraps into a body of water or leave them on shore. Although you are not intentionally feeding alligators, the result is the same.
- Avoid swimming at dawn or dusk when gators actively feed; swim during daylight hours only.
- Avoid areas with thick shoreline vegetation.
- Do not allow pets to swim in waters known to contain alligators or in areas where humans swim. Pets attract alligators because they are easy to overpower.
- If an alligator poses a threat to human safety, don't take matters into your own hands. Call the nearest office of the Commission.

As long as we choose to voyage into Florida's shrinking wild areas, we can expect to encounter wildlife. These experiences, whether with gators, snakes or other critters, help us come to know and appreciate our state's diversity of native wildlife and the natural communities in which they live.

Michael Wisenbaker is a part-time free-lance writer and photographer and a veteran scuba diver.

MICHAEL WISENBAKER

A magnificant spring loomed ahead. A garter snake slithered by as I approached.



Springs of Passage

Text and Photographs by Doug Stamm

> *"Behold, for instance, a vast circular expanse before you, the waters of which are so extremely clear as to be absolutely diaphanous or transparent as the ether...At the same instant innumerable bands of fish are seen, some cloathed in the most brilliant colours; the voracious crocodile stretched along at full length, as the great trunk of a tree in size, the devouring garfish, inimical trout, and all varieties of gilded painted bream, the barbed catfish, dreaded sting-ray, skate and flounder, spotted bass, sheepshead and ominous drum; all in their separate bands and communities, with free and unsuspicious intercourse performing their evolutions..."*
>
> — *William Bartram*

More than two centuries have passed since William Bartram penned this descriptive phrase. Bartram, a colonial naturalist, was commissioned by the king of England to describe the natural resources of the crown's southeastern American colonies.

But where was this place where flounder shared their waters with bream, where skate and ray swam with spotted bass, where sheepshead roamed with gar, all under the watchful eye of a voracious crocodile? It could have been at a juncture where fresh water meets the sea, where a few inhabitants of each domain, by their hardy nature, survive in a saline environment not quite fresh, not quite marine.

But Bartram was far from the sea as he gazed into that limpid scene. He was seated on the bank of one of Florida's many springs — one of the crystalline windows into a freshwater environment active with life from the sea.

It's not unusual to see saltwater fish visiting freshwater environments. It happens wherever salt and fresh water come together. But our pristine springs display a vast abundance of marine life in some of the clearest fresh water in the world.

Why do such numbers of saltwater fishes invade Florida's fresh waters with privileged impunity? More than 100 species of freshwater fish and about 600 ▷

In a clear and silent world, freshwater springs give birth to rivers, but saltwater fish are likely to visit.

saltwater species occur in Florida waters. With all these salty species around, it's no coincidence that so many find their way into Florida's fresher waters.

The tremendous length of Florida's coastline and the profusion of springs and spring-fed rivers that flow into the Atlantic Ocean and Gulf of Mexico allow easy access to interior regions of the state.

All fresh water is not created equal. Some scientists believe that marine fish are attracted to "hard" water that is rich in ions. Hard water contains dissolved ions that allow some marine fishes to osmoregulate successfully. [**Editor's note:** see page 24 for an explanation of this physical process that maintains the salt balance.]

Florida's prolific springs are larger and deeper than other known springs in the world. About 320 major artesian springs have been identified in the state, but because they occur in such varied form and location, their numbers are unknown.

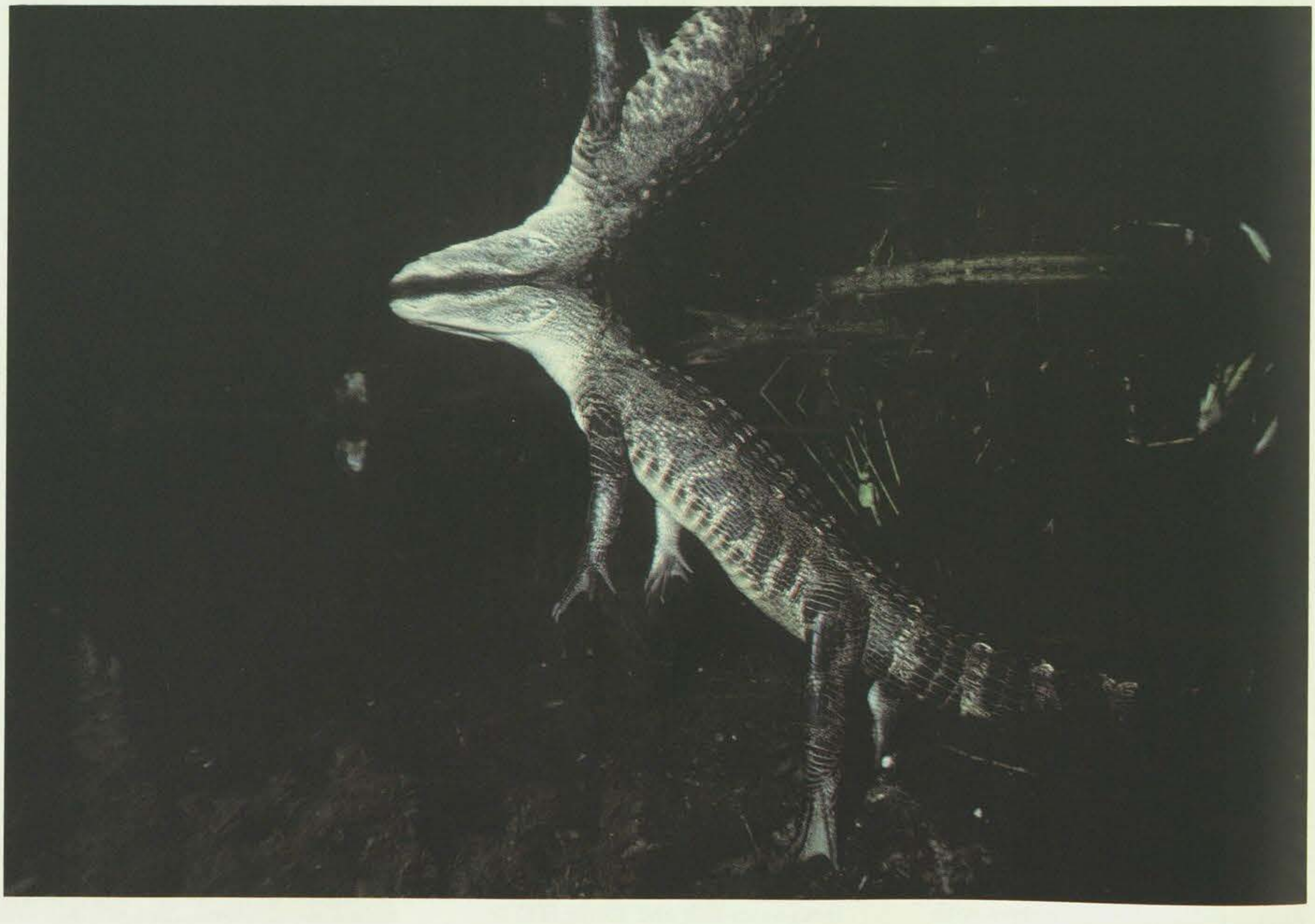
Scientists measure springs in terms of flow rates and categorize them in degrees of magnitude. First-magnitude springs are largest, meeting or exceeding flow rates of 100 cubic feet per second or 64.6 million gallons per day. Of 78 known first-magnitude springs in the United States, 27 are in Florida. Rising from subterranean depths, these springs become sources of Florida rivers. Unmeasured others rise through cavernous openings in the ocean floor off Florida's coasts, their great intrusions of fresh water creating "boils" or "slicks" on the surface of the sea.

Springs normally bring to mind thoughts of cold water, but their relatively constant year-round temperatures are warm in comparison to the winter chill of the Atlantic Ocean and Gulf of Mexico. Florida's springs average 70° F in the north and 75° F farther south. As winter begins to cool Atlantic and Gulf waters, the greatest number and variety of saltwater fishes appear in springs, attracted there repeatedly while others remain throughout the winter.

Most fishes, whether saltwater or freshwater, are strictly confined to their respective mediums. Some species are euryhaline — able to tolerate a wide range of salt concentration. Although some oceanic visitors can survive in springs, their ability to do so and their length of stay depend on their tolerance of fresh water and the spring's proximity to the sea.

Most saltwater fishes found in springs will remain for a brief time and then must leave if they are to survive. Others will stay for months and then leave to spawn in the sea. A very few, with the rare capability of reproducing in fresh water, will remain permanently.

Like the panorama that Bartram saw two centuries past, the vistas of spring terrains are still open to those who would sit at their banks and behold the events of an aquatic world. But today, non-divers and



divers alike have opportunities to view the springs environment in ways that Bartram would surely envy.

Four of Florida's largest springs are now commercial enterprises. Although these springs are off-limits to diving, each allows a unique and clearer look into some of the world's most striking fresh waters.

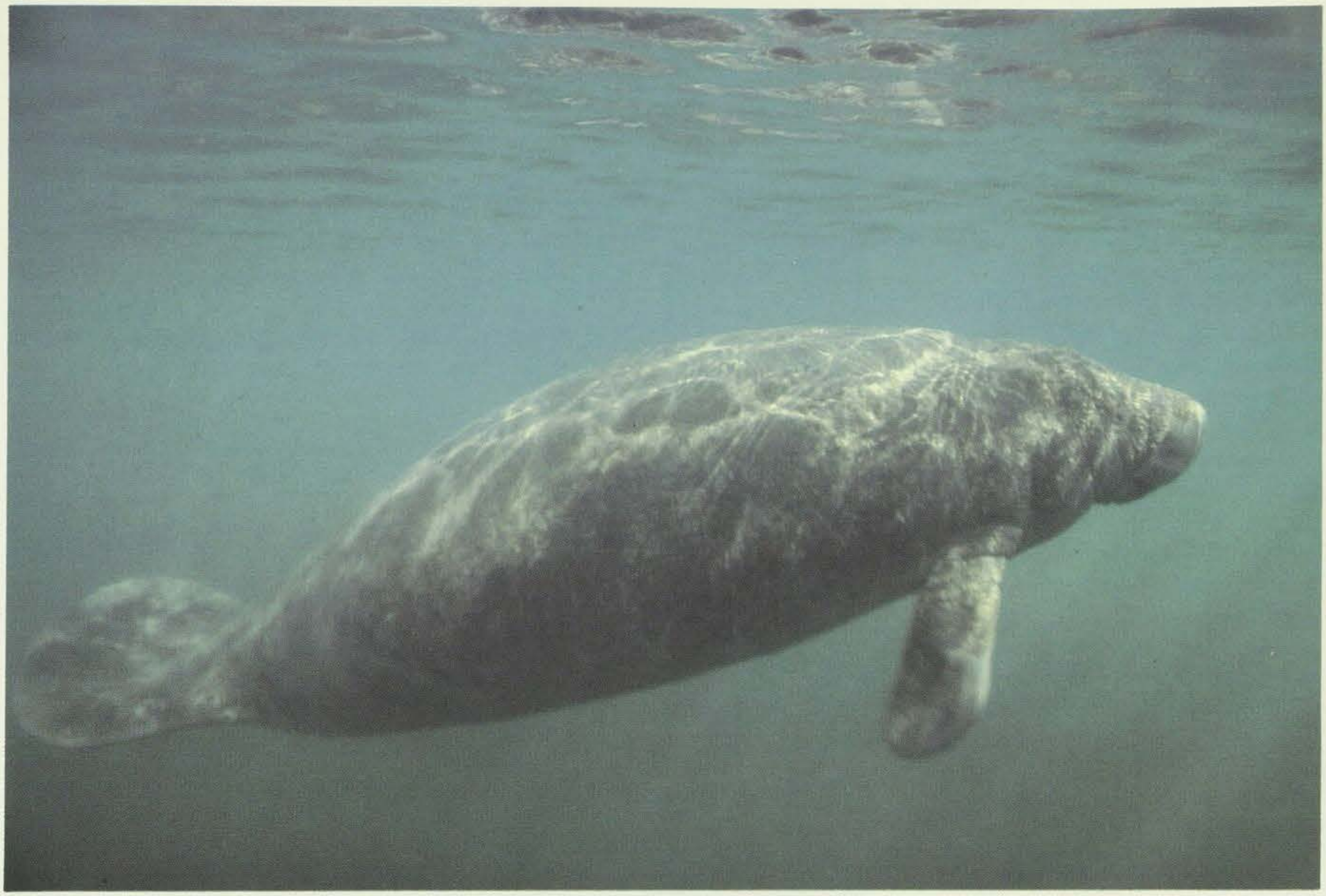
In the middle of the Homosassa River headspring, a 168-ton underwater observatory floats in 45 feet of water. Built in 1964, it was launched like a ship, its launch-ways lubricated with bananas rather than potentially harmful, oil-based grease. Hundreds of large saltwater fishes — jack crevalle, tarpon, snook, sea catfish, sheepshead — swim undisturbed through the spring, visible from an underwater perspective through large, plate-glass windows. Representative freshwater inhabitants, however, are rare in the midst of those larger oceanic predators. Homosassa is one of Florida's most popular west coast fishing areas, where abundant saltwater game fish are taken from fresh water.

Two other springs, Silver and Wakulla, provide glass-bottom boats that float on crystal-clear waters, giving passengers a transparent view of the many inhabitants that dwell in two of the largest springs in the world. Another spring, Weeki Wachee, features "mermaids" who perform underwater ballet.

Those springs with close access to the sea provide a wondrous mixture of inhabitants and behaviors. Tarpon and shark move bluegill and largemouth bass aside. Golden shiners dodge the darting, twisting attack of schooling jacks. Great hovering schools of mangrove snappers hang at entrances to subterranean caves. Other snappers shed their schooling markings and descend into the caves — habitat not unlike wrecks and coral crevices they prefer in the sea — and share cramped, dark niches with freshwater catfish and eels.

Homosassa and other large springs mark the northernmost winter range of the Florida manatee ▷

About 320 major artesian springs have been identified in Florida, but because they occur in such varied form and location, their actual numbers are unknown.



In winter, manatees seek thermal refuge in Florida's springs.

Juvenile hogchoker flounder are abundant, but well-hidden, spring visitors.

Schoolers by day, longnose gars become solo hunters after dark.

that migrates from cold oceans to seek winter refuge in warm spring sanctuaries.

Inland springs that flow ultimately to the sea shelter juvenile flounder camouflaged in white sands and vegetation on headspring slopes. American shad enter the mouth of the St. Johns River, travel a hundred miles upstream to the Oklawaha River then to the Silver River, emerging finally in the brilliant clarity of Silver Springs. This arduous journey of almost 200 miles is immediately traversed again downstream. Mullet in winding schools, and needlefish skimming the surface in small groups, weave through hundreds of headspring pools after a yet further journey, both species ubiquitous nomads of Florida rivers and springs.

For the diver who ventures into night waters, the springs take on new dimensions. Night reveals the presence, in nearly surreal, dark waters, of creatures often unseen by day.

Shining silver caravans of schooling mullet twist and swerve through the beam of a diver's light, diverging and merging again, or in sudden fright, darting through the beam like a shower of silver meteors.

Prolific blue crabs emerge from daylight reclusion to wander spring floors, scavengers in search of the dead and dying.

Unpredictable needlefish, elusive and skittish by day, become fleeting lances in the presence of lights. In random confusion, they slam with audible blows into the bottom, or collide with the light itself, bending and breaking their beaks in the ricochet.

American eels, fishes that have migrated from the Sargasso Sea, arise from caverns and burrows and swim, snake-like, in search of prey. The most hermitic and light-shy of all spring creatures, they flee a diver's light with alarm, as though it brings danger and pain.

Longnose gars, armor-plated relics of another age and one of few freshwater fishes to venture into the sea with any regularity, break from schooling formations at dusk to become transient, solo hunters in darkness. As though hypnotized, their great archaic forms glide by slowly, often closely.

Florida's springs have changed little since Bartram described them. As long as we recognize and protect their beauty and purpose, Florida's springs will remain as they are: at the edge of two aquatic dominions, vibrant with life, life often transient and endemic to neither.

Doug Stamm is a professional photographer/writer in Sauk City, Wis. seeking a publisher for his book, ***The Springs of Florida.***

How Fish Osmoregulate To Adapt To Their Environment

Most of us know what happens to a slug when salt is poured on it. The slug's body fluids leave its porous skin, causing it to shrivel. A similar condition would occur when freshwater fish enter salt water if not for osmoregulation, which counterbalances the process of osmosis.

Osmosis is the tendency of two fluids on opposite sides of a semi-permeable membrane, such as skin, to diffuse to maintain equal concentrations. In the ocean, where the water is saltier than the fluids within the fish, water naturally leaves the fish. Conversely, fish in a lake or river would absorb water and bloat. Osmoregulation is an active process that prevents these occurrences from killing fish.

In salt water, fish must "drink" to retain their body fluids. Their kidneys have developed an effective mechanism for eliminating excess salts. In fresh water, to counteract the physical phenomenon that forces water into their bodies, fish kidneys produce vast quantities of low-salt urine. Freshwater fish eliminate 10 percent of their body weight daily as urine.

In an over-simplified way, that explains how osmoregulation allows freshwater and saltwater fish to adapt to their respective aquatic environments.

Some fish are better equipped to tolerate a switch from fresh to salt water or vice versa. Those with little tolerance for such a switch are called "stenohaline." The freshwater largemouth bass and the saltwater Spanish mackerel are two examples of fish that would not survive for long as "exchange students."

At the other end of the scale are "euryhaline" fish, those able to tolerate a broad range of salt-water concentrations. As a result of their ability to adapt to either salt water or fresh water, they are able to go back and forth from the oceans to rivers and lakes. A fish that can spend part of its life in fresh water and part in salt water is called "diadromous." The terms "catadromous" and "anadromous" refer to fish that spawn in salt or fresh water, respectively.

The most common example of a catadromous fish is the American eel, which spawns in the Sargasso Sea in communal courtship rituals. Eggs hatch into larvae that drift with the ocean currents. When the larvae get close inshore they metamorphose into "glass-eels" and swim upstream into freshwater rivers. There they develop into what we think of as freshwater eels. Finally, when they mature, they become "silver eels" and return to the Sargasso Sea, north of Bermuda, to complete their life cycle.

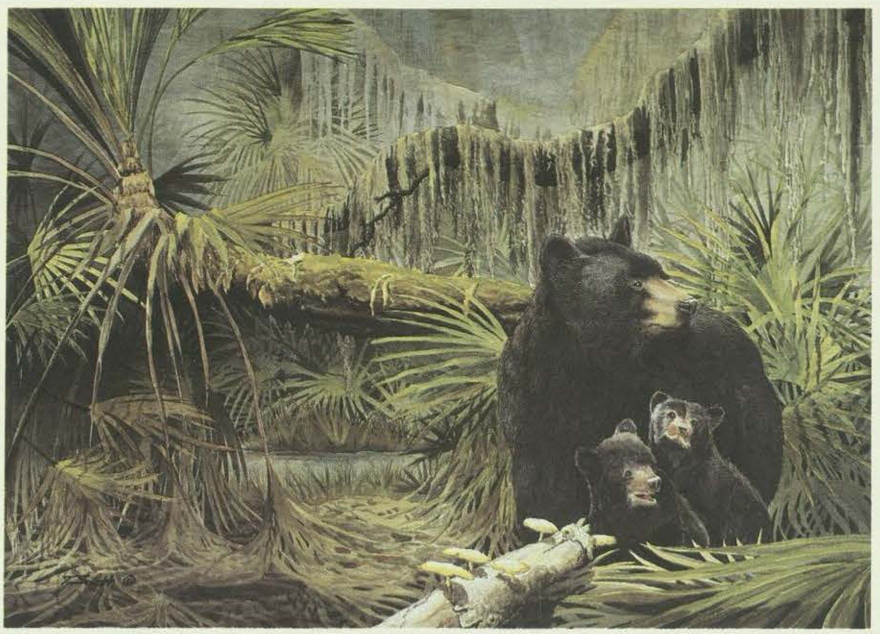
The most famous anadromous fishes are salmon, which spawn and die in cold, freshwater rivers of the Pacific Coast. Their fry then develop into "smolts" that return to the Pacific to feed and grow until the spawning urge draws them back to fresh water to ensure future generations. American shad is a local example of an anadromous fish. They return each winter to the St. Johns and St. Marys rivers in Florida to spawn. The young then return to the fertile Atlantic Ocean to mature, often going as far north as Canada to feed and grow before returning to our waters to spawn.

It is through adaptation and the energy-using process of osmoregulation that some fish can move back and forth between fresh and salt water. Most fish, however, are confined to waters in which they are born and would find changes in salt concentration nearly as dangerous as for a slug.

— Bob Wattendorf
Assistant Director,
Division of Fisheries

DOUG STAMM

1991 Cover Art Winner



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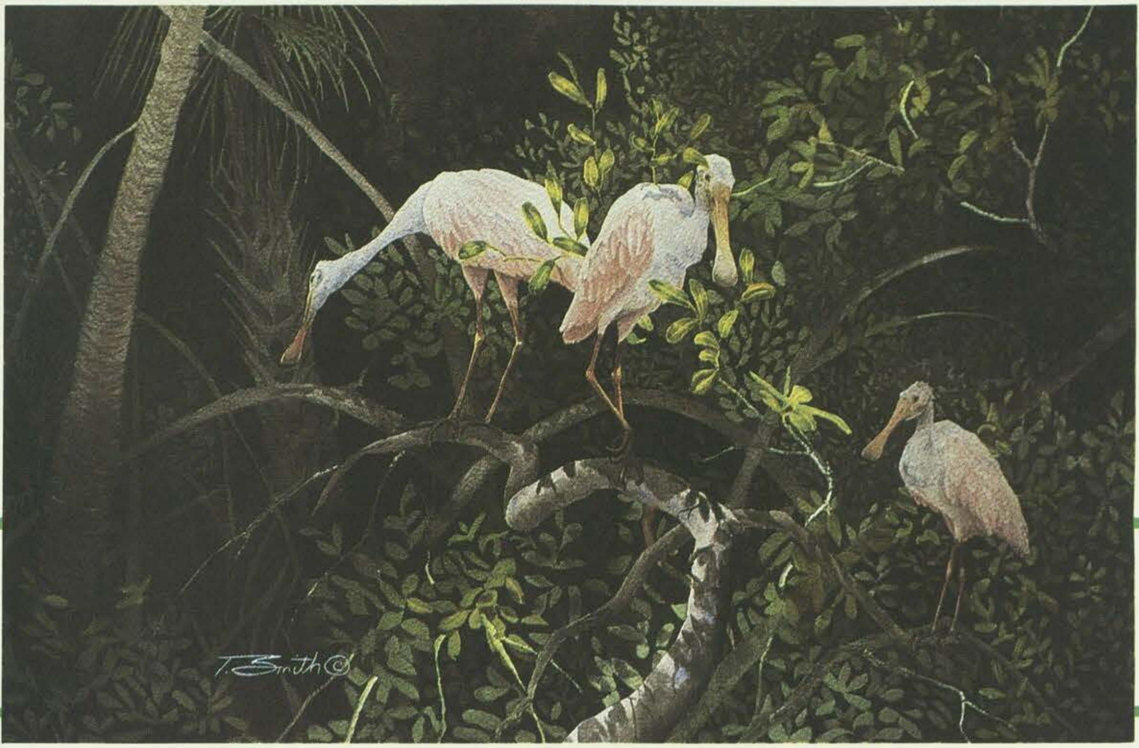
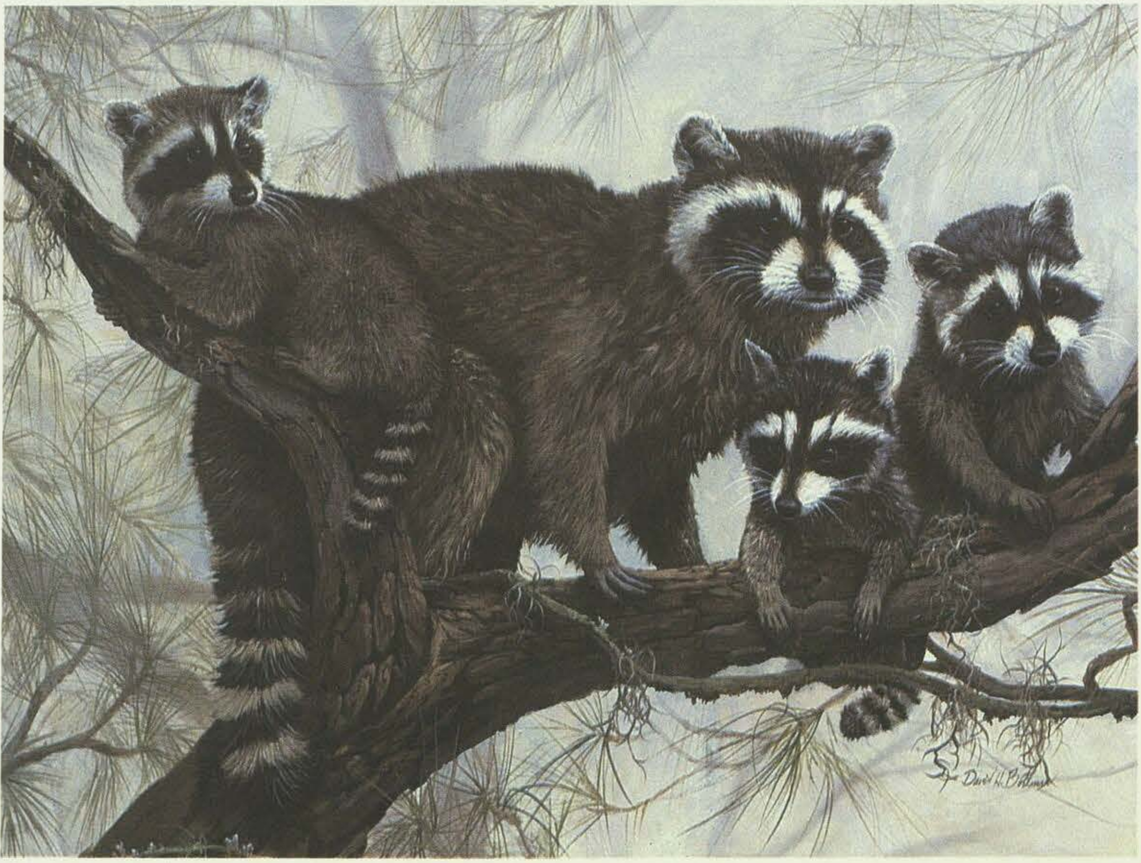
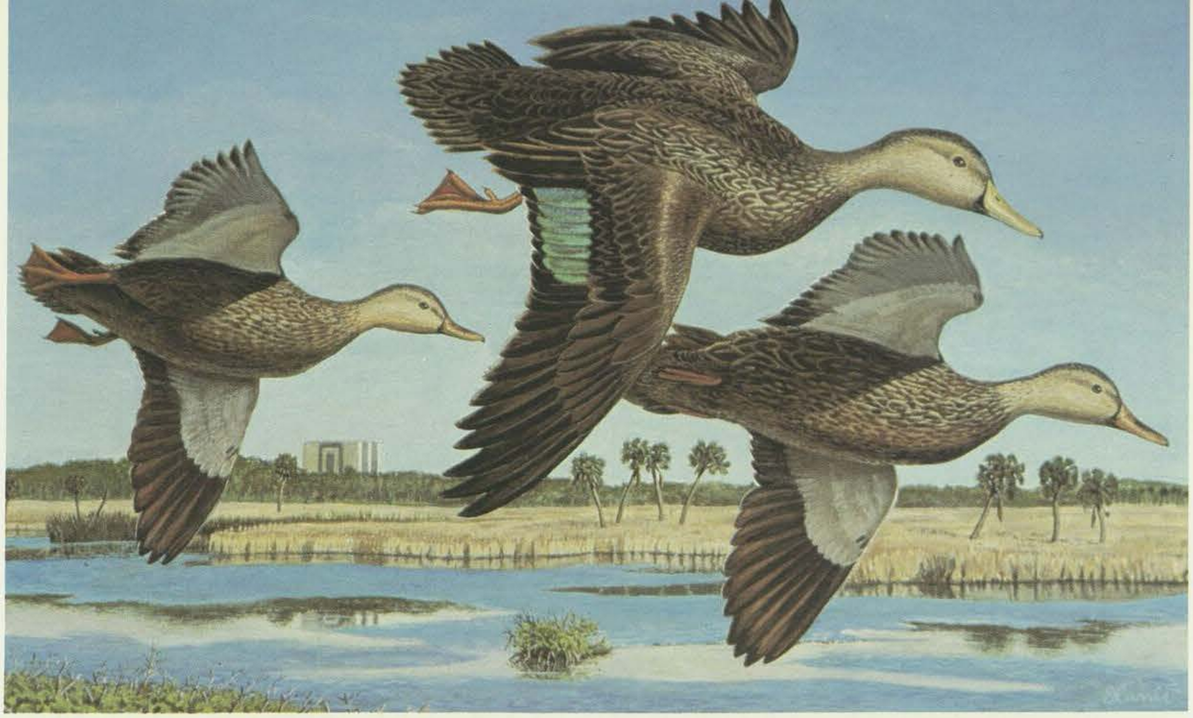


ROSEATE SPOONBILLS by Terry Smith

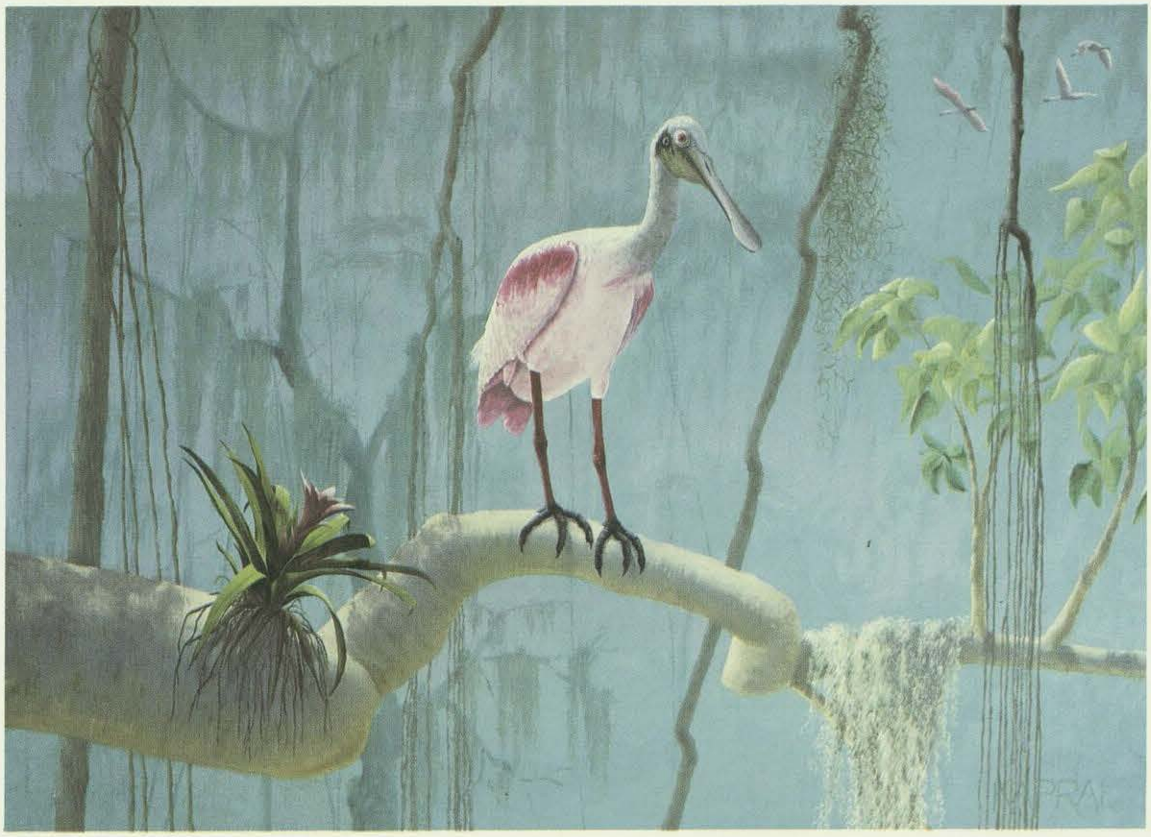


RACCOONS *by David Bollman*



MOTTLED DUCKS by John N. Harris

Contestants depicted Florida's diverse wildlife and habitats in their entries for the cover art competition. We're sharing some of our favorites for you to enjoy. Support FLORIDA WILDLIFE's efforts to promote wildlife art by taking advantage of our free print offer on page 25.



ROSEATE SPOONBILL by Paul Kapral

▷

SNOWY EGRET by Daniel Ambrose

GREAT EGRET by Paul Kapral

Delicate Balance

Species: White-crowned Pigeon (*Columba leucocephala*)
Florida Status: Threatened
Federal Status: Candidate for listing

The white-crowned pigeon lives life on the fringe. In the United States, this large, plump bird occurs on the southernmost fringe of peninsular Florida and down into the Florida Keys. Globally, its range is restricted to the West Indies, and it rarely moves far from the sliver of island coastlines.

Common names (baldpate, white-headed pigeon) point to the prominent white patch on its forehead and crown. This patch is brighter on males, while females have crowns smudged with brown and gray. The bird is roughly the same size as the feral pigeon seen in cities and towns, and from a distance, it appears totally black, except for the head. A closer look reveals a more subtle interplay of blue, brown, white and gray. The back of the neck is adorned in alternating tiers of bronze and black.

White-crowned pigeons nest on mangrove islets and infrequently on coastal cactus stands. The nests are usually set high in mangroves, one to a tree, and pigeons aggregate on certain islets to form noticeable colonies.

Much of Florida's breeding population appears to leave the state during the winter, but the location of wintering grounds and pattern of migration are unknown. The reappearance of birds in spring can be irregular: some returning in March, many in April and some not until May. Such irregularity probably reflects the bird's dependence on seasonally abundant fruits throughout its range.

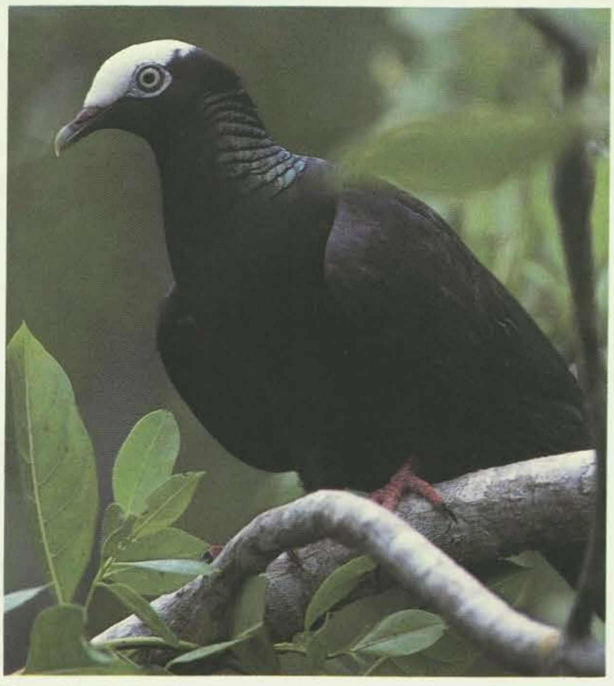
There are numerous threats facing white-crowned pigeons. It is illegal to hunt this species in the United States. However, hunting is unregulated outside the states and often coincides with the breeding season, when the taking of an adult translates into the taking of two small young in the nest. Also, mangrove nesting sites continue to be obliterated for houses and commercial developments.

Although mangrove islands in south Florida receive some legal protection, the rapid loss of tropical hammocks, which receive little legal protection, is a pressing threat. Pigeons nest in the mangroves but fly inland to tropical hammocks to gather food for young. Nesting success is intimately linked to the diversity of fruits adults can find in canopies of nearby hammocks. In particular, adequate amounts of poisonwood (*Metopium toxiferum*), blolly (*Guapira discolor*) and native fig (*Ficus* spp.) appear especially important to nesting success.

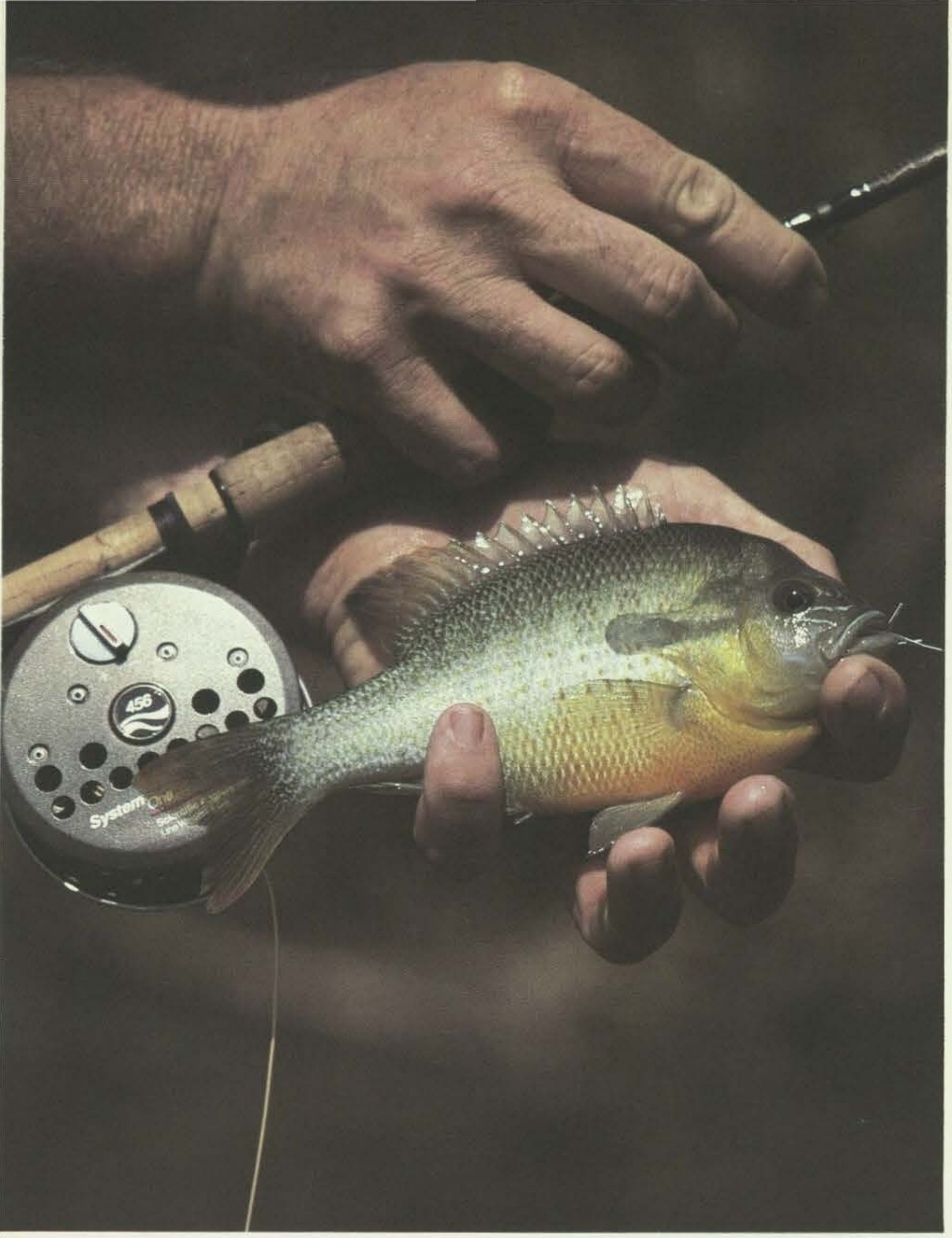
Both housing and commercial development threaten to destroy the few remaining unprotected stands of tropical hammocks in south Florida. The loss of these limited habitat areas will eliminate the fruit trees required to raise young and cause adults to extend their foraging bouts over much larger areas. This lowers nesting success and also means the young that do fledge will have farther to fly in search of fruit trees once they leave the nest. Unless many tracts of tropical hammocks are protected in a well-distributed manner, many fledglings will never find the areas they need to survive.

Habitat protection and replanting efforts may allow this swift, agile, south Florida species to continue its flight over the forests and waters of our state.

— Jim Cox
Office of Environmental Services



REED BOWMAN



TOM EVANS

Those Feisty Bream

By Mark Fisher

These dual-personality panfish are agreeable enough to take your bait, scrappy enough to fight like a much larger fish.

Call them scrappers. Call them feisty. Call them fun. Call them, pound for pound, the most-fighting fish around. But, you say, Florida has lots of scrappy, feisty, fighting fish.

Well then, these fish have dual personalities that make them agreeable yet contentious, cooperative, yet aggressive. They take an angler's bait, then fight fiercely with the strength of a much larger fish. These qualities apply to a narrower field of fish...tasty panfish that are so much fun to catch: bream.

Still, "bream" is a name given to several types of sunfish. Some get their names from the colors of parts of their anatomies — bluegill and redbreast. Others are named according to certain characteristics of their mouth — shellcracker and warmouth.

Although bluegill, redbreast, shellcracker, warmouth and other sunfish are different from each other, they're all related and can be caught with some of the same strategies. The following techniques are effective when you hit the lake or pond with visions of dancing bobbers in your head. They also come in handy when your intended game fish doesn't cooperate, but you want to catch something before the day's over.

One of the best times to fish for bream is when they're spawning. It's easy to locate their round, shallow-water nests. And when you find one nest, there will be plenty more in the vicinity. Bream often build their nests on sandy bottoms amidst vegetation. The light-colored nests are often easy to spot.

When you find bream, even if they're not spawning, pull out your fly rod. Fly fishing for bream offers several advantages. One is that you can move your lure a few inches or feet with a flick of the wrist (with some help from the forearm). A fly rod enables you to get the bait back to the target area quickly after missing a strike, and the long, whippy rods don't smother the fight out of the fish. Besides, fly casting looks impressive and, no, you don't have to wear a funny hat with flies stuck in it.

Nor do you have to tie your own flies to match the hatch. Your bream-fishing arsenal is complete with a few popper bugs and a couple of black ants. Those ants may be called spiders, beetles, gnats or any other "specialty" designation that dry-fly trout anglers like to purchase. For bream, though, just a creature with a thick, black body and a few rubber legs does the trick.

If the water is somewhat stained, the wind is blowing a slight ripple on the surface or bream are eager to strike a topwater bait, cast a popper bug to them. Use a bright one — yellow, chartreuse or orange — with a deep, hollow face. Twitch it slowly so it chugs, and either pause between twitches or keep the retrieve coming back steadily.

When the water's clear and flat or the bream are a little nervous, pull out one of your black ants. They're less imposing and will attract the fish's curiosity. Keep the movements slight and allow the ant to sink. Once it falls a couple of inches, you'll catch those bream that will creep to the surface but just won't strike something on top.

Another bream strategy will allow you to move around the water and enjoy the scenery rather than anchor the boat. Bream hang out along the tree-lined banks in the back of coves. They orient to different types of structure along those banks such as rocks, stumps, fallen trees and bushes. The structure provides places for bream to hide from predator fish while waiting in ambush for food. In the summer, the cool shade is comforting to both bream and anglers.

Work the banks of the coves by casting spinners with ultralight rod and reel outfits. Four- or 6-pound-test line on a flexible rod will allow you to fully enjoy the pulls and darts of a hooked bream.

Small Beetle Spins, Rooster Tails and Mepps spinners will catch bream. Those spinners are available in a variety of blade shapes and body types. Spinner bodies may be squirrel hair, marabou feather or a rubber grub. I've found that the fanciest spinner is not necessarily the most effective. I had a fishing partner who was an expert at catching bream with artificial lures. His favorite bait was a tiny Mepps hairless spinner. Other appropriate lures for bream include short, floating minnows and small crankbaits.

You can switch to a different bream strategy while you're in the back of a cove. Although you can find bream near all types of structure, they especially like wood. So if you find a fallen tree with a large trunk and plenty of limbs in the water, give it some extra attention. A fallen tree is a bream apartment complex, so knock on a few doors and see if anyone is home.

Actually, you should send a cricket to knock on those doors. A cricket will be a welcome sight at Sunfish Manor and certainly will be invited to dinner. You'll know that your door-to-door cricket has made a sale when your bobber disappears. If there's one sight I like to see more than a bream sucking down a popper bug, it's seeing a bobber jerked out of view within half a heartbeat.

A fallen tree is a bream apartment complex, so knock on a few doors and see if anyone is home.

Of course, the choice of live bait is a personal one. Although I choose crickets first, especially when the bream are active, I'll switch to red wigglers when the bream are lazy. If you run out of your favorite bait, try this: clean a fish you intend to eat later, cut the larger internal organs into tasty chunks, and put those on your hook. [**Editor's note:** Florida law allows you to do this, as long as you use only bream or pickerel that you have caught and bait a pole and line or rod and reel only.]

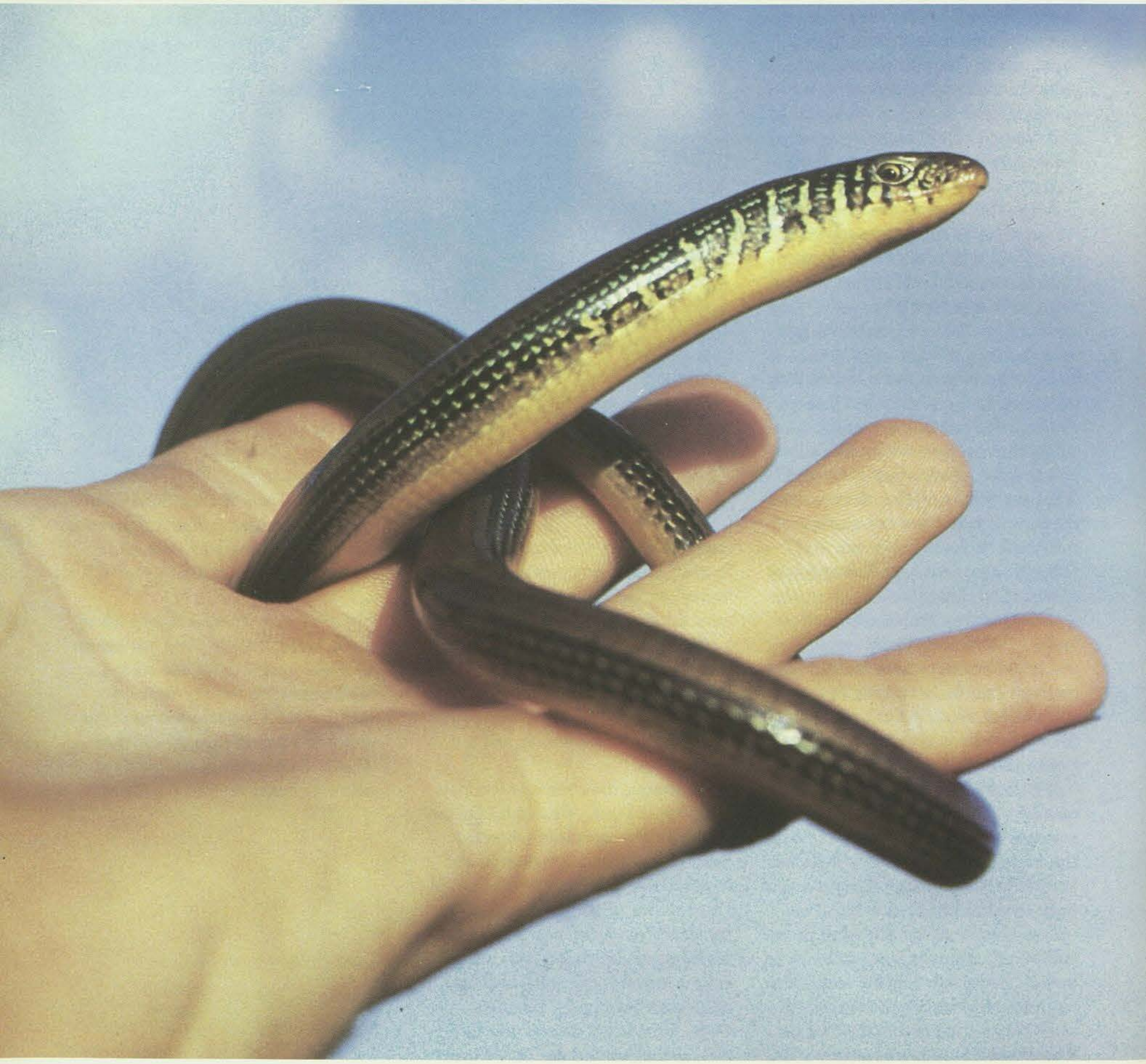
I prefer fluorescent red or lime Styrofoam floats with a plastic peg. They don't crack and slowly fill with water like hard plastic, round ones will. Styrofoam floats are lighter than hard plastic floats and won't burden the fleeing bream as much. By the same token, use the lightest weight necessary to sink your cricket. The lighter the tackle at the end of your line, the more you'll feel the fish during the fight.

If your live bait is resting on the bottom and trying to hide among the vegetation or squirm into the mud, the bream may not notice it. A worm hiding behind some grass or a cricket that's buried itself into the mud isn't very obvious to a bream searching for suspended or floating food. Rig your sinker 6-12 inches above the hook. That will keep the bait off the bottom and in the bream's "looking for chow" zone.

So grab a fly rod, cane pole or ultralight rig. Tie on a popper, skewer a cricket, or cast a fake minnow. Look for them near a submerged log, in vegetation or near a bridge piling, and wait to witness the dual personality of the bream. Its agreeability prompts it to cooperate and bite your bait. Then its combativeness makes it fight with more strength than you thought such a little body could muster.

Mark Fisher is a contributing editor for ***Georgia Wildlife*** *and has written for* ***Field and Stream*** *and other publications. He recently earned a master of mass communications degree with a scholarship from the Outdoor Writers Association of America and now writes copy for Bass Pro Shops.*

When Is a Snake Not a



Snake?

By Pat Shafland

"Look, there's a small snake in the hole you just dug for your bougainvillea!"

"No, that's not a snake, that's a skink. I can tell by the shape of its head."

"Well, it's too late to know for sure now. It just disappeared like a flash through the tall grass." When my husband and I finished planting the bushes, I went inside to look up what we had seen. I wanted to know if we'd spotted a snake or some kind of lizard. We have lots of snakes and lizards around the yard.

After looking in both the Audubon Society's and Peterson's field guides to reptiles and amphibians, I realized we had seen a legless lizard known as the eastern glass lizard. This reptile is a member of the family Anguidae, which also includes the island glass lizard, alligator lizards and European "slow-worm."

Legless lizards, which have no legs or toes of any kind, look more like snakes than other lizards. But with careful observation, it's easy to see why they are classified as lizards.

Glass lizards have moveable eyelids and external ear openings; snakes do not. These lizards also have a deep, flexible groove that runs along both sides of the body. The groove is lined with soft, granular scales that permit expansion of the body when needed, such as when the lizard eats or when females are ripe with eggs. The eastern glass lizard has no dark stripes or pigment below the groove or down the middle of the back. Unlike other glass lizards, the eastern glass lizard has an area of several irregular white to yellowish vertical bars on its neck. It also is the only glass lizard that can be green.

The eastern glass lizard, which can reach 18 to 42 inches in length, is typically 6 to 8 inches at the time of hatching. The young are khaki-colored, with wide, dark stripes running along their sides. In the spring, the female lays a clutch of eight to 17 eggs that take about two months to hatch. The female glass lizard will remain with the eggs until they hatch. Typical of most reptiles, however, the young are on their own after hatching.

When a glass lizard's tail breaks off, it continues to wiggle, which captures the predator's attention while the lizard escapes to grow a new one.

The striking resemblance of glass lizards to skinks is in their shared characteristic of scales that are reinforced with bony plates. When you hold or touch the lizard, it feels stiff, very fragile and breakable. It seems that if you were to drop the lizard it would break as if made of glass — thus its name.

The long tail makes up two-thirds of the lizard's total length and can easily break in several places. This fact has given rise to various old wives' tales claiming that snakes can break into two or more pieces and grow together again. Of course, it is just the tail that grows back. This is a handy defense against predators. After breaking off, the glass lizard's tail continues to wiggle, capturing the predator's attention while the lizard escapes to grow a new tail.

PHOTOGRAPHS BY PAUL L. SHAFLAND

Glass lizards are not only harmless to humans, they are a gardener's friends because the bulk of their diet consists of many different kinds of insects and snails. They also eat spiders, small snakes and other small lizards.

Glass lizards can be found from North Carolina to Florida and are most often seen early in the morning while they search for food in deep grasslands and meadows. Since they like to burrow in sandy soil, you can sometimes find them while digging in the garden. But look closely, because you may think you've seen a small snake, when it's really a glass lizard.

Pat Shafland is a biologist and a part-time free-lance writer. Her husband is a biologist with the Commission's Exotic Fisheries Laboratory, where the family resides.

Family-Style Panfishing

Text and Photographs by Bob McNally

Simple, relaxing angling for pint-size sport fish may be the best reward of all for Mom, Dad and the kids.

It's bream fishing time in the lower St. Johns River. Late spring to early autumn is perfect for family outings, and bream fishing is ideal because it doesn't take much time, effort, expense or fancy equipment. And because it's one of the best times of the year for catching bream, such outings usually result in plenty of fish that are great to eat.

For my family fishing crew, it's not just those species of sunfish commonly referred to as "bream" that we're after. A wealth of other panfish fall victim to St. Johns bream baits, and they all fillet just fine and taste just as good.

One of the mistakes some St. Johns River bream anglers make is fishing the same water in the same manner throughout the spring-autumn season. Often, they tap shallow water when deeper water is more productive.

During a trip to the river one summer day, I saw several boats of anglers anchored in large creeks that feed the lower St. Johns. They used cricket and earthworm baits and usually fished in several feet of water along edges of lily pads and visible eel grass.

While at times such shallow-water fishing works, and works well, we found the fish in much deeper water that day. We began by fishing in about four feet of water around docks and piers and near eel grass. We caught a couple of bluegills from several such spots, but most of what hit our earthworm baits were small blue crabs.

Finally, we moved to deeper water, about 10 feet, and fished near docks and old pilings. The fishing was red-hot, non-stop action with the same earthworm baits. In just a couple of hours we boated roughly 50 fish, including nine different species.

Our catch included redbreast sunfish, bluegills, redear sunfish (shellcrackers), channel catfish, mullet, sheepshead, croakers, redfish (released unharmed) and crappies. I was surprised we didn't catch a largemouth bass that afternoon. Another morning we caught a 2-pound flounder in the same spot.

All this action took place in what is considered the "freshwater" portion of the river. People catch striped bass, seatrout, black drum and sometimes even jack crevalle and ladyfish in the same area of the St. Johns — some 30 miles from the Atlantic Ocean at the river's mouth. It's easy to see that this seasonal kind of "catch-all" panfishing in the lower St. Johns goes beyond simple "bream fishing."

Another plus for this family-style fishing is that it's available throughout the lower St. Johns, from downtown Jacksonville south to Lake George. The larger creeks that feed the river can be good, as can Doctors Lake. Moreover, this is fishing that's about as easy as fishing can be.

Some of it can be done from the bank or from the few bridges with wide sidewalks. Bank fishing also can be great for panfish in the river and its feeders. Wading anglers can move around the shallow areas and tap into water that most fishermen pass.

The best action, though, is from a boat. It allows anglers to get far enough away from easy access sites on the river and creeks to water that is less pressured. You don't need to move a mile away from a boat ramp or easy-access bank spot. Just get a few hundred yards off the beaten path.

Tackle and techniques for this fishing are simple, too. You can use almost anything that casts, though lighter-action rods and lines testing under 10 pounds are most appropriate. You can use a bobber, but I've had best results with a ¼-ounce split-shot pinched onto the line just 18 inches above a No. 6 TruTurn hook. I just cast the whole thing out and allow it to sit on the bottom.

This is how we caught all nine species listed above —including the crappie. The kids dig up plain old backyard "garden hackles" (earthworms) that score great on the river's panfish. If you want to get fancy, bait some hooks with crab meat, crickets, grass shrimp, Missouri minnows, shad, shiners, chicken livers or other concoctions.

I believe earthworms, though, are the best all-around panfish bait in the St. Johns. Most of the other baits are more "species specific," meaning that Missouri minnows are likely to catch crappies, grass shrimp take bream, or chicken livers get catfish.

Earthworms usually catch 'em all, even the occasional crappie.

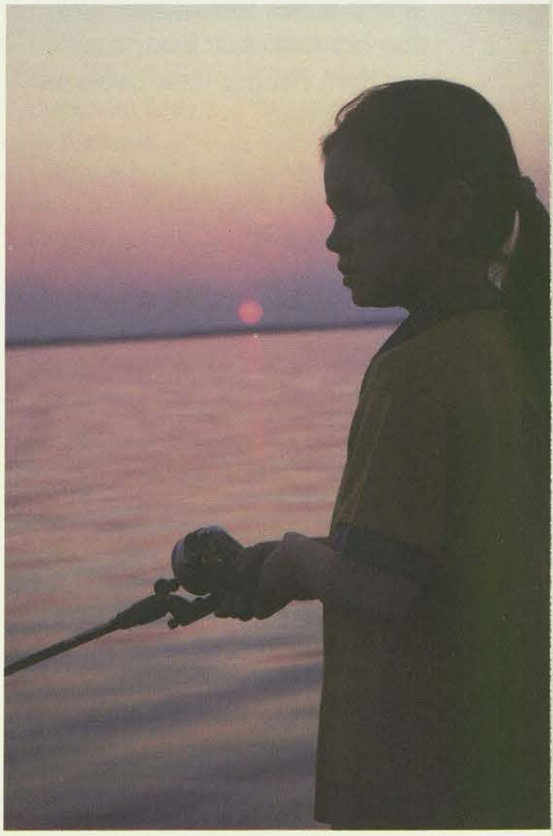
Tide effect in the lower St. Johns is appreciable all the way to Lake George, some 60 miles from the river mouth. But I don't think tide has much impact on river panfishing, though moving water does seem to turn-on the fish best. I've had better action early and late in the day, or during overcast weather.

You need just a couple of hours early in the morning or late in the afternoon to tap into this St. Johns panfish bonanza. If you fish regularly from the same dock, creek or bridge site, you could "sweeten" or "bait" the area with soybean cake, moistened dog food or cottonseed cake. This attracts the minnows, crabs and crayfish that bring in the bigger panfish. The panfish themselves also eat the "bait."

Even if you don't live near the lower St. Johns River, if you're looking for a rewarding way to spend time with your family, make panfishing your summer passion.

Bob McNally is outdoors editor for the ***Florida Times Union*** *newspaper and a regular free-lance contributor. He wrote "Urban Frog Gigging," which also appears in this issue.*

Missouri minnows are likely to catch crappies, grass shrimp take bream, chicken livers get catfish, but earthworms catch them all.



Bristol's Bream Lady

When times were tough she dug her own bait and made her own fishing line, bobbers and sinkers.

By Carolee Boyles-Sprenkel

CAROLEE-BOYLES SPRENKEL

A century ago, fishing was far more than recreation. For many people, it was survival, especially in the rural South. Fish was a staple in many Floridians' diets; if you could catch fish, you could eat well, no matter what else happened. That kind of experience tends to produce expert anglers.

Just ask Sadie White of Bristol. For most of her 103 years, Mrs. White has fished for bream in the streams and lakes of north Florida and south Georgia. Though she doesn't fish as much now as she used to, she retains her deep love for the outdoors.

Born in 1888 in what is now Grady County, Ga., Mrs. White was raised by her grandmother after her mother died. Her grandmother, who loved to fish, took young Sadie along from the time she was very small. In fact, if a "fishing gene" exists, this family surely has it. Mrs. White is cousin to Lake Seminole fishing legend Jack Wingate.

Time has dimmed Mrs. White's vision, but it hasn't robbed her of her sense of humor or memory. When asked how she fixed a worm for fishing, she laughed heartily. "I used to say 'Granny, the fish ain't a'biting.' She'd say, 'Then spit on your bait and hold your mouth right!' So I'd spit and go. . ." she recalled as she held her mouth in an exaggerated pout.

When times got tough, Mrs. White caught fish by "mudding" for them. After a big rain, the water rose and then receded; fish were left in potholes and ditches. She and her family would get into these holes and stir the water up, either with a stick, a hoe or their feet. "Fish can't stand muddy water," she said. "They'd come up and you could see them." She would use a dishpan or a flour sack to scoop the fish up out of the water.

"We used to get a gunny sack and some sticks. We'd seine with anything just to catch fish. We'd get an old chain and put it in the bottom of it to hold it down."

She also used green walnuts to

catch fish. "That poisons the water,"* Mrs. White said. "You could put a bunch of green walnuts in a sack and take a hammer and beat them up. Then take the sack and jiggle it up and down. The fish would just come up to the top of the water."

***Editor's note:** in 1929 a law was passed to make this fishing method illegal.

As far as conventional methods go, she's rarely fished with anything but a wooden pole. "I never did do a lot of fishing with a rod and reel." Her pole need not be cane, she said. She's used willow and gallberry, as well as other woods. Basically, if a branch was the right size and length, she tried it. And she always cuts the pole to fit the water she's fishing in. If the creek is small, she uses a short pole; if the creek is wide, she cuts a long one.

Mrs. White's favorite bait is earthworms. When her children were growing up, they created their own "worm bed." They laid boards on the ground where they threw out the dishwater. Earthworms really flourished under that board.

Besides worms, Mrs. White has often fished with shiners and crickets. She prefers to hook the cricket in the back rather than in the head, so it will splash about on the surface of the water and attract fish.

Just say "fishing" and she's ready to go.

GFC

She also likes to use what she calls a "flathead," a wood-boring beetle larva. She collects them from under the bark of dead trees; they're tough enough that she can use one to catch several fish.

In the 1940s, Mrs. White lived and worked in Arcadia, Fla. She frequently fished with a female co-worker who owned a car — a luxury then.

"They couldn't drive to the water," her 77-year-old daughter Jennie Geary recalled. "They'd have to go to the nearest point and climb over a fence where they had Brahma cattle. They'd watch to see whether the cows were anywhere nearby. One day the bull got after them." Mrs. White and her friend crouched down in some palmettos and waited for the bull to go away. "I'd rather have taken my chances with the bull than with the rattlesnakes in those palmettos!" Mrs. Geary recounted with a laugh. "I told her that she'd better find a place to fish where they didn't have to go through cows!"

Mrs. White's favorite bream fishing is in streams. "When you're walking up and down streams you see holes. You find a hole where there's an eddy and fish there, close to the bank."

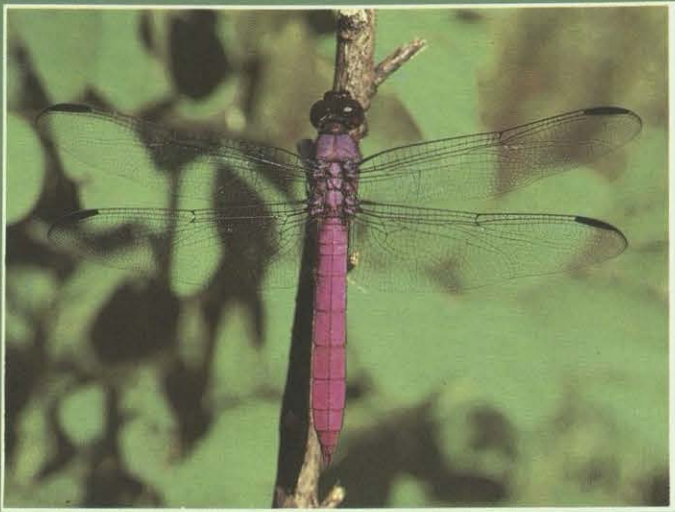
In times of scarcity, Mrs. White not only dug her own bait, she also made a lot of her own tackle. When fishing line was hard to come by, she braided some out of three strands of sewing thread. Bottle corks served as bobbers. Buckshot hammered into shape worked for sinkers.

These days, Mrs. White doesn't get to fish as much as she did in the past. Though a couple of her grandsons will take her out in their boats, her daughter and two sons worry that one day she might fall in. But she doesn't worry about those details. Just say the word "fishing," and she's ready to go.

Carolee Boyles-Sprenkel is a free-lance writer specializing in hunting, fishing and outdoor recreational activities. She recently was elected president of Florida Outdoor Writers Association.

Florida's Dragonflies

By Sidney W. Dunkle



Roseate Skimmer
SIDNEY W. DUNKLE

The cool, tea-colored water of north Florida's Santa Fe River purled gently around my knees as I waded quietly along its edge. Golden sunlight streamed down through the rising morning mist in this, one of the garden spots of the universe.

To my left, up the river, a green dot winked into being and grew larger as it swiftly came closer. As it flashed past, it resolved into the emerald-green eyes of a large, black-and-yellow dragonfly. I took my best shot with an oversized butterfly net, but missed. I wasn't even close enough to scare him with the net-wash, and he rocketed on down the river. But a few minutes later, one came from the right, my best side for net swinging, and a go-for-the-fence baseball swing put him deep into the net bag. An instant twist of the net handle closed the bag and trapped him inside.

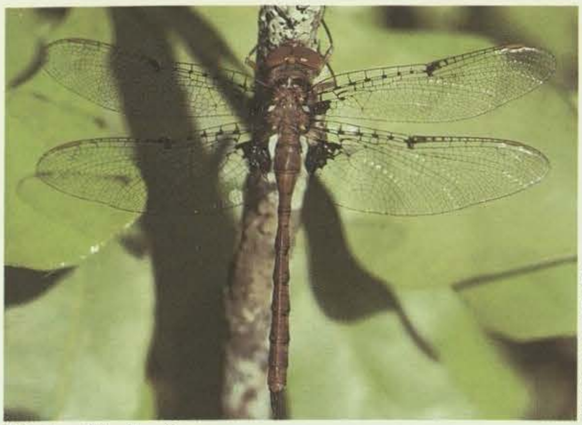
It was one of my favorite animals, one of Florida's largest dragonflies with about a 5-inch wingspan: a royal river cruiser. And yes, this was a "he," because the males of this species find mates by cruising up and down rivers watching for females that have come to lay eggs in the water. The female usually flies rapidly back and forth near a steep bank, touching the tip of her abdomen to the water every few seconds. This washes off clusters of green eggs, which settle and stick to the bottom. Flat, brown larvae emerge with long, spidery legs and a rhinoceros-like horn. They sprawl on the bottom, where they probably take at least two years to mature. The larvae make good water-quality indicators because their presence suggests that nothing terrible has happened to the river in the past couple of years.

Dragonfly collecting will never be an Olympic event, but it certainly qualifies as a challenging sport. In fact, it is several sports rolled into one. It's like hunting because you often have to stalk the game to within range. It's like fishing because you are around water and can release your catch if you wish. It's like baseball or tennis, because you swing at a fast-moving projectile. It's also like birding because you can watch and identify dragonflies at a distance through binoculars. And to find your quarry, you must camp, hike or canoe. It's fun! It's also science.

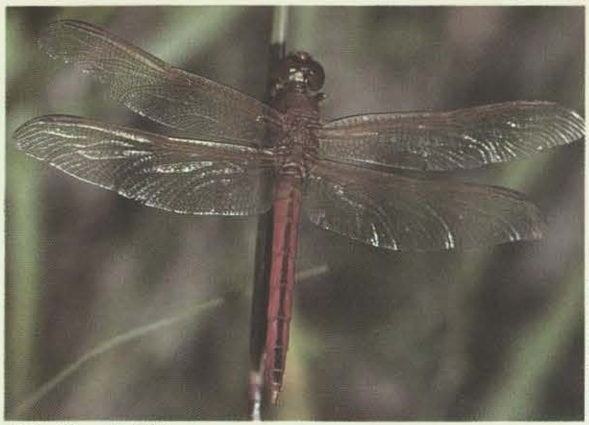
I wish there was a better term for "collecting," because the dragonfly researchers I know do not collect just to collect. Instead, they use the specimens to document the presence of a species in a particular habitat at a particular time, to study geographical variation and for many other purposes. In my work, I find myself looking at specimens over and over for different reasons each time.

If there is a drawback to dragonfly collecting as a hobby, it is that at the end of the day you have nothing to eat, as you might after a day of hunting or fishing. Some people in Asia eat dragonflies, but I suspect you would use up more calories in pursuit than their crunchy, little bodies would produce. Maybe dragonflies would make a good diet food.

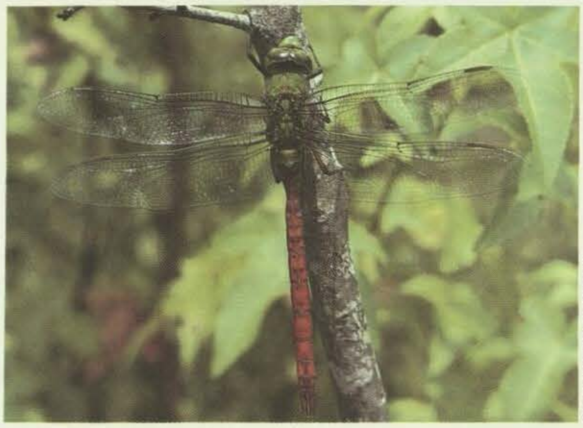
Florida is blessed with 112 species of dragonflies, one-third of all


SIDNEY W. DUNKLE

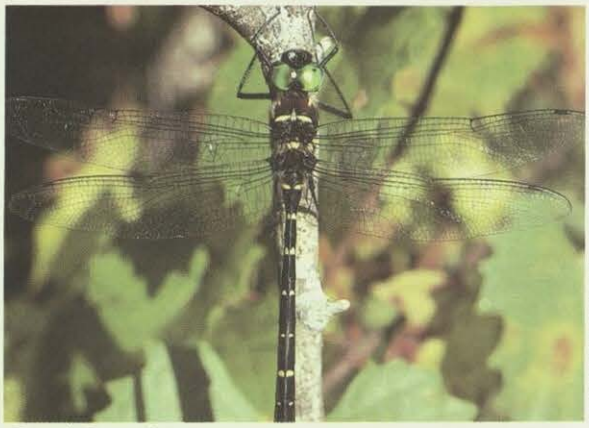
Umber Shadowfly


BARRY MANSELL

Needham's Skimmer


SIDNEY W. DUNKLE

Comet Darner


SIDNEY W. DUNKLE

Royal River Cruiser

dragonfly species in the United States and Canada combined. Florida also has 44 species of damselflies, smaller cousins of the dragonflies, and one-third of North American damselfly fauna.

Damselflies are usually easy to distinguish from dragonflies by their posture. Most damselflies hold their wings pressed together above their backs, while dragonflies hold theirs straight out to the sides. Both are beneficial and harmless to humans. They cannot sting, and they are strictly carnivores, devouring lots of other insects, including mosquitoes. In fact, many Floridians call dragonflies "mosquito hawks." This name is appropriate, because adult dragonflies act as the peregrine falcons and eagles of the insect world. The aquatic larvae do an equally good job on the mosquito wrigglers underwater.

Among the species of Florida dragonflies, some stand out as being particularly hard to catch. A prime example is the comet darner, a large, green-and-red dragonfly. This one is easy to identify at a distance but so ▷

Many Floridians call dragonflies "mosquito hawks" because they act as the peregrine falcons and eagles of the insect world.

SIDNEY W. DUNKLE

Author in pursuit of dragonfly.

ELSIE JONES

Wandering Glider

ELSIE JONES

Chalk-fronted Skimmer

BARRY MANSELL

Great Blue Skimmer

notoriously hard to catch that scientists will accept sight records of it in lieu of actual specimens. The males cruise around ponds, looking for females, but they fly an unpredictable path, usually barely within net range. Comet darners are incredibly quick dodgers, bouncing over, under or around even the fastest net swing. When I have been lucky enough to catch a one, I have noticed that the wings are narrow, stiff and brittle. River cruisers' wings are like that, too, and such wings seem to be characteristic of the fastest-flying dragonflies.

Dragonfly species like the ones above are why dedicated dragonfly hunters custom-build their nets to be as large, light and strong as possible. I built a giant net with a hoop made from a 9-foot steel rod with a minnow seine sewed onto it. It was so big that I could stand up inside it. Great for camouflage maybe, but it wasn't practical. Air resistance bent the hoop when I tried to swing it, and it was always getting tangled in the brush. I have had to drop back to a modified fish-landing net with a hoop 1½ feet across and about one-tenth-inch mesh.

Shadowflies are especially sporty dragonflies. They are medium-sized, brown, and hide in the woods during the day, then come out to zip over the water just before nightfall. One of the most elusive is the pale-sided shadowfly, which flies from May to July for only about 15 minutes a day, starting about 40 minutes before it gets completely dark. Bagging even one of these darting targets in the deepening dusk is a good night's catch. Even more elusive is the umber shadowfly. We know they breed in Santa Fe Lake, the source of the Santa Fe River, because we have found the larvae there. But as far as I know, no one has caught, or even seen, a mature adult of this species in Florida.

Perhaps the most difficult to catch of all dragonflies are those that habitually fly high or well out over the water, beyond net range. A good example is the treetop emerald of the Florida Panhandle, a slender, elegant, metallic-brown-and-green species. Its scientific name means "the provoking, green-bodied one," because it flies around the treetops, frustratingly out of reach of even a long-handled net. I have not been able to catch one in 18 years. Desperate dragonfly hunters have been known to revert to the methods of the duck hunter and use a shotgun on species like these!

Who knows, there might be a high-flying species of dragonfly in Florida so fast, so rare and so wary that no one even knows it exists!

Sidney W. Dunkle is manager of the International Odonata Research Institute, a private, nonprofit association located at the Florida Division of Plant Industry, Department of Agriculture and Consumer Services, Gainesville.

Record Fish Update

By Scott Hardin

Seven new species were added to Florida's list of record fish in 1990. Shortly thereafter, records were set for three of them. In October, Eddie Flowers landed a 53-pound blue catfish from the Escambia River in northwest Florida. A month later, Mark Soucy set the butterfly peacock bass record with his 5-pound, 5¾-ounce fish from Black Creek in Dade County. It stood until April when Jed Drucker caught a 6-pound, 7¼-ounce trophy. At the close of 1990, Brian Hilton's 1-pound, 5¾-ounce oscar established him as the first record-holder for this species.

Joining these on the list are flathead catfish, yellow bullhead, black bullhead and skipjack herring. Flathead catfish are relative newcomers to Florida, migrating south from the Chattahoochee and Flint rivers in Georgia. Except where experimentally stocked in the 1970s, this species occurs only in the Apalachicola River drainage. Fisheries biologists first found flatheads below the Jim Woodruff Dam at Chattahoochee in 1982. Since then anglers using live bait commonly land 20- to 30-pound fish. The minimum qualifying weight for this species is 20 pounds, and the first record for this fish-eating catfish may not be far away.

Like the flathead, blue catfish have taken a downstream route to Florida. The first fish were observed in the Escambia River following major flooding in the spring of 1990. Recently, Commission biologists found a few blue catfish in the neighboring Yellow River. Since Flowers' record-setter, other blue catfish have been caught in the 50-pound range, and this species seems to be a permanent member of Florida's fish community.

The butterfly peacock bass records mark the culmination of a major success story. Following extensive research at the Commission's Exotic Fisheries Lab in Boca Raton, biologists imported this aggressive fighter from South America in 1984 to control the prolific, exotic fish that had overpopulated many South Florida canals. After several successful spawns, the prohibition on harvesting butterfly peacock bass was lifted in 1989, and a two-fish daily bag limit was established (only one fish may be over 17 inches).

Drucker caught his fish in Snake Creek (Canal C-9), one of many canals in the 330-mile network of waters sustaining peacock bass in Broward and Dade counties. Drucker, an ardent supporter of catch-and-release, kept the fish alive while he transported it to the Commission's lab for positive identification. Unfortunately, the record fish died a day later, in spite of Drucker's commendable efforts to live-release it.

Biologist Paul Shafland, who directs the Commission's peacock research, thinks a new record is right around the corner. "We've seen peacock bass over 7 pounds while sampling," Shafland said. "I wouldn't be surprised to see a 7½-pounder come in, but that size is approaching the upper limit for the species. An 8-pounder may come in one day, but I couldn't say when."

The initial butterfly record was broken by over a pound in four months. At that rate "when" may come sooner rather than later.

Scott Hardin is a biologist with the Commission's Division of Fisheries.

FLORIDA RECORD FRESHWATER FISH PROGRAM

STATE RECORDS THROUGH MAY 1991

Largemouth bass **(*Micropterus salmoides*)**	20 pounds, 2 ounces NOT CERTIFIED	Frederick Joseph "Fritz" Friebel, May 1923 Big Fish Lake (private), Pasco County
Black crappie **(*Pomoxis nigromaculatus*)**	3 pounds, 12 ounces NOT CERTIFIED	John McGilvray, Dec. 1964 Newnans Lake, Alachua County
Chain pickerel **(*Esox niger*)**	8 pounds, 0 ounces NOT CERTIFIED	Jimmy James, July 5, 1971 Lake Talquin, Gadsden County
Carp **(*Cyprinus carpio*)**	40 pounds, 9 ounces NOT CERTIFIED	Bernard Leon Rowan, May 24, 1981 Apalachicola River, Gadsden County ▷

FLORIDA RECORD FRESHWATER FISH PROGRAM

STATE RECORDS THROUGH MAY 1991

SPECIES	OFFICIAL WEIGHT	ANGLER, CATCH DATE & LOCATION
Largemouth bass **(*Micropterus salmoides*)**	17 pounds, 4¼ ounces CERTIFIED	Billy M. O'Berry, July 6, 1986 Unnamed lake, Polk County
Redeye bass **(*Micropterus coosae*)**	7 pounds, 13¼ ounces CERTIFIED	William T. Johnston, Feb. 18, 1989 Apalachicola River, Gadsden County
Spotted bass **(*Micropterus punctulatus*)**	3 pounds, 12 ounces CERTIFIED	Dow Gilmore, June 24, 1985 Apalachicola River, Gulf County
Suwannee bass **(*Micropterus notius*)**	3 pounds, 14¼ ounces CERTIFIED	Ronnie Everett, March 2, 1985 Suwannee River, Gilchrist County
Striped bass **(*Morone saxatilis*)**	38 pounds, 9 ounces CERTIFIED	Justin McAlpin, Nov. 15, 1979 Lake Seminole, Gadsden County
Butterfly peacock bass **(*Cichla ocellaris*)**	6 pounds, 7¼ ounces CERTIFIED	Jed Drucker, April 7, 1991 Snake Creek (C-9 Canal), Dade County
Oscar **(*Astronotus ocellatus*)**	1 pound, 5¾ ounces CERTIFIED	Brian D. Hilton, Dec. 30, 1990 Everglades Conservation Area, Broward County
Skipjack herring **(*Alosa chrysochloris*)**	VACANT	
White bass **(*Morone chrysops*)**	4 pounds, 11 ounces CERTIFIED	Richard Steven Davis, April 9, 1982 Apalachicola River, Gadsden County
Sunshine bass **(white bass x striped bass hybrid)**	16 pounds, 5 ounces CERTIFIED	Thomas R. Elder, May 9, 1985 Lake Seminole, Jackson County
Black crappie **(*Pomoxis nigromaculatus*)**	3 pounds, 8 ounces CERTIFIED	Ronald Kevin Prevatt, March 5, 1988 Lake Dias, Volusia County
Flier **(*Centrarchus macropterus*)**	1 pound, 1 ounce CERTIFIED	Justin McAlpin, July 5, 1985 Lake Iamonia, Leon County
Bluegill **(*Lepomis macrochirus*)**	2 pounds, 15¼ ounces CERTIFIED	John R. LeMaster, April 19, 1989 Crystal Lake, Washington County
Redbreast sunfish **(*Lepomis auritus*)**	2 pounds, 1¼ ounces CERTIFIED	Jerrel R. DeWees Jr., April 29, 1988 Suwannee River, Gilchrist County
Redear sunfish **(*Lepomis microlophus*)**	4 pounds, 13¾ ounces CERTIFIED	Joseph (Joey) Marion Floyd, March 13, 1986 Merritts Mill Pond, Jackson County
Spotted sunfish **(*Lepomis punctatus*)**	0 pounds, 13¼ ounces CERTIFIED	Coy Dotson, May 12, 1984 Suwannee River, Columbia County
Warmouth **(*Lepomis gulosus*)**	2 pounds, 7 ounces CERTIFIED	Tony David Dempsey, Oct. 19, 1985 Yellow River (Guess Lake), Okaloosa County
Redfin pickerel **(*Esox americanus*)**	1 pound, ¾ ounce CERTIFIED	Robert E. Wilcox Jr., July 18, 1986 Jr. Walton Pond, Okaloosa County
Channel catfish **(*Ictalurus punctatus*)**	44 pounds, 8 ounces CERTIFIED	Joe Purvis, May 19, 1985 Lake Bluff, Lake County
Flathead catfish **(*Pylodictis olivaris*)**	VACANT	
White catfish **(*Ictalurus catus*)**	16 pounds, 12 ounces CERTIFIED	Shawn James Williams, April 24, 1984 Caloosahatchee River, Lee County
Blue catfish **(*Ictalurus furcatus*)**	53 pounds, 0 ounces CERTIFIED	Eddie E. Flowers, Oct. 28, 1990 Escambia River, Santa Rosa County
Bowfin **(*Amia calva*)**	19 pounds, 0 ounces CERTIFIED	Jim Brown, Nov. 5, 1984 Lake Kissimmee, Osceola County
Brown bullhead **(*Ictalurus nebulosus*)**	3 pounds, 7 ounces CERTIFIED	Arthur M. McIver, Aug. 30, 1989 Watertown Lake, Columbia County
Yellow bullhead **(*Ictalurus natalis*)**	VACANT	
Black bullhead **(*Ictalurus melas*)**	VACANT	
American shad **(*Alosa sapidissima*)**	5 pounds, 3 ounces CERTIFIED	Bud Dankert, Feb. 15, 1990 St. Johns River, Seminole County
Longnose gar **(*Lepisosteus osseus*)**	41 pounds, 0 ounces CERTIFIED	Evan D. Merritt, April 14, 1985 Lake Panasoffkee, Sumter County
Alligator gar **(*Atractosteus spatula*)**	122 pounds, 0 ounces CERTIFIED	Michael Horton Booth, Sept. 19, 1987 Escambia River, Escambia County
Florida gar **(*Lepisosteus platyrhincus*)**	7 pounds, 0 ounces CERTIFIED	Greg Rozycki, June 28, 1988 Oklawaha River, Putnam County

Ask Your Biologist

Dear Biologist:

Can snakes scream? We've heard it said that cottonmouths in particular make some sort of vocal noise.

Sincerely,

We Like Snakes

Dear WLS:

Many snakes make some kind of noise when they are threatened, but I would not classify these sounds as "screams," although perhaps the snake feels it is screaming! The only snake "vocalizations" I know of are hissing sounds made by the expulsion of air through the opening to the windpipe. Since snakes have no vocal cords, these sounds shouldn't be considered true vocalizations, although they can be effective attention-getters. The most noise I've heard from cottonmouths is sort of a sighing wheeze, which might not even be intended as a threat. Other snakes are expert hissers, and some, such as the Florida pine snake, have a special flap of cartilage that serves to amplify the intensity of the hiss to a veritable roar.

The most common sound snakes make is not with their heads but with their tails! Many of our nonvenomous snakes, including the black racer, rat snakes and kingsnakes, and all the venomous pit vipers (cottonmouth, copperhead and rattlesnakes), vibrate their tails rapidly when excited. Rattlesnakes obviously have carried this to an extreme with the evolution of the rattle. The rattlesnake's rattle is not living tissue, but is made up of loosely interlocking segments of dead tissue, and a new segment is added each time a snake sheds. Nevertheless, the tail/noise-maker can be quite startling, especially when used in dry leaves. More than once have I hesitated to dive into a bush after a black racer when I heard that "rattling!"

One other snake noise that should be mentioned is that made by Africa's saw-scaled viper. This deadly snake has patches of specially ridged scales along its body which it rubs together to produce a loud hissing sound.

Snakes may not be able to scream, but they sure can shake, rattle and roll!

Sincerely,

David G. Cook
Wildlife Biologist

GFC

It's The Law

By Inspector Kyle W. Hill

Question: How can I legally post my property?

Answer: Florida Statute 810.011-.10 specifies how landowners may deal with trespassing. "Posted land" is defined as land surrounded by posted signs not more than 500 feet apart. The signs must be at the corners and around the entire boundary. The signs must have letters at least 2 inches high, with the words "no trespassing" in addition to the name of the owner or lessee. The signs must be clearly noticeable from outside the boundary. Exceptions to this requirement include:

* Land less than five acres on which there is a dwelling house.

* Cultivated land that has been cleared and planted with a crop (including trees).

* Land that has a fence of "substantial construction." It is not necessary to fence any boundary formed by water.

The penalty for trespassing on posted, cultivated or fenced land is a fine of up to $1,000 and/or one year in jail. It is a felony to trespass with a firearm.

These statutes are written so that landowners must become actively involved in prosecutions. The county sheriff responds to trespass complaints. The Game and Fresh Water Fish Commission responds only to illegal hunting or other conservation crimes on private lands. It is not the Commission's policy for officers to routinely make trespass arrests.

Question: I hear so much about boating accidents these days. How can I best safeguard my family on a boating trip?

Answer: As a boat operator, one of the most important things you can do to ensure the safety of your passengers is to stay sober! Boat operators are subject to the same "under the influence" laws as automobile drivers, so refrain from drinking alcoholic beverages while operating your vessel.

Another important precaution is to make sure your boat has all the required safety equipment, especially a PFD (personal floatation device) for each passenger. It's not enough to have the devices on board. We recommend that passengers *wear* them whenever the boat is under power. The number one cause of death in boating accidents is drowning. A PFD that's stowed away in a compartment won't save anyone's life.

Many boaters think they don't need to wear a PFD if they know how to swim. But knowing how to swim won't help if an accident leaves you unconscious or otherwise unable to swim.

Contact the nearest Commission office for a free copy of the "Florida Boater's Guide," which contains a description of the types of PFDs and other safety equipment available.

MERCURY MARINE

*The child is wearing his PFD, but we recommend that **all** passengers wear theirs whenever the boat is under power.*

Hunter Education

By Captain Ed Tyer

In 1989, the Florida Legislature passed a law effective June 1, 1991 requiring certain hunters to successfully complete an approved hunter safety course prior to hunting with a firearm. The 1991 Legislature revised this law to include hunters with muzzleloaders, bows and crossbows as well as firearm hunters.

As of June 1, 1991, it is unlawful for any person born on or after June 1, 1975 to take wild animal life with the use of a firearm, muzzleloader, bow or crossbow in this state without first successfully completing an approved hunter safety course. Hunters affected by this requirement who must purchase a hunting license will be required to present proof of satisfactory completion of Florida's Hunter Education course or an approved course provided by another state or Canadian province when purchasing a license. Persons not required to possess a hunting license but born after June 1, 1975 must have their hunter safety card with them while hunting.

Exemptions to this law apply to persons hunting in their county of residence on their homestead or the homestead of their spouse or minor child, or to any minor child hunting on the homestead of their parent.

Florida's Hunter Education program is taught by citizens who volunteer their time to make hunting a safer and more enjoyable sport. The free, 16-hour course provides training in safe gun handling techniques, firearm and ammunition nomenclature, gun and hunting laws, wildlife identification and management, wilderness survival and first aid, the basics of hunting with archery and muzzleloading equipment and hunter responsibility. Upon completion of the classroom portion of the course, each student attends a range session and shoots a rifle, shotgun and bow. Satisfactory completion of Florida's program meets the requirements of other states where this type of training is required.

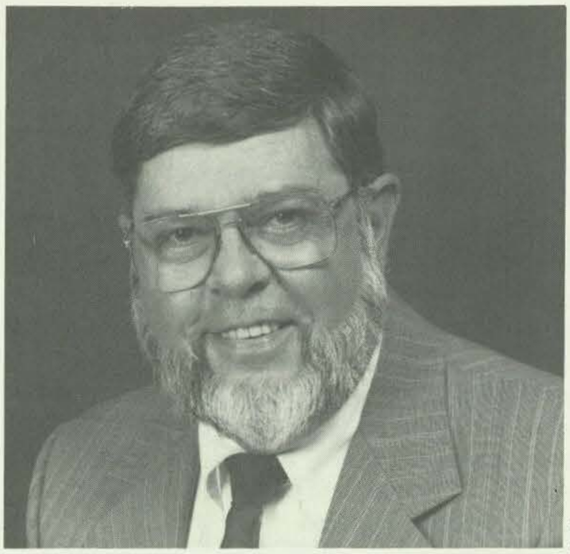
The Commission encourages all hunters to take our free Hunter Education course. **But, we remind anyone born on or after June 1, 1975 with plans to hunt in Florida: you must have passed an approved hunter safety course prior to going afield.**

For information on the next course in your area, contact the nearest Commission office.

GFC

Conservation Update

Compiled by Scott Ball


GFC

J. Ben Rowe Joins Commission

Gov. Lawton Chiles has appointed Gainesville publisher J. Ben Rowe to a five-year term on the Game and Fresh Water Fish Commission. Rowe replaces William G. Bostick Jr. of Auburndale, whose term expired in January.

Amid Florida's population growth, diminishing land resources and crowded public waters, Rowe sees his role on the Commission as one of striking a wise balance between use and preservation that will reshape the state.

"Mankind is not a visitor on this planet," Rowe said. "People are not out of place in nature, but our stewardship of the resources is very important."

The 50-year-old Rowe grew up in Kentucky and moved his family to Florida in 1969. He is a lifelong sportsman and current state president of the National Wild Turkey Federation. He also is an active member of Ducks Unlimited, Safari International, Florida Wildlife Federation and other conservation organizations.

It's Steel Shot From Now On

Beginning with the 1991-92 hunting season, waterfowlers must use steel shot when hunting ducks anywhere in the United States. The national ban on lead shot culminates a five-year plan to phase out the use of toxic shot. Ducks sometimes ingest spent lead pellets when feeding, resulting in death by lead poisoning. Consumption of lead-laden ducks is also a health hazard to other wildlife species and to humans.

In Florida, the gradual phase-out started with the requirement of steel shot for waterfowlers in certain areas. Each year of the plan saw more areas prohibiting the use of lead shot. As of the 1991-92 season, the entire state is a "steel-shot" zone.

International Effort To Halt Bird Decline Begins

Seven federal agencies have agreed to promote conservation of "neotropical" migratory birds — those that breed in the United States and Canada but winter farther south.

Such birds include the scarlet tanager, ruby-throated hummingbird, northern (Baltimore) oriole, rose-breasted grosbeak, many warblers and other species of forest and grassland birds.

"They play an essential role in the ecosystem and are admired by more than 80 million Americans who feed and watch birds," said John Turner, director of the U.S. Fish and Wildlife Service (USFWS).

Nearly a quarter of U.S. bird species are neotropical migrants. In some states, more than 70 percent of such species declined in number from 1980-89. The species that appear to be in the most trouble are those using forested habitats in both their breeding and wintering areas. In the north, it is believed the birds are affected by forest "fragmentation" — the replacement of large blocks of mature forest with smaller patches of younger forest.

The agencies plan increased efforts to manage and conserve bird habitats in North American forests, parks and refuges. Many species need large tracts of forests or benefit from corridors that connect one wooded tract to another.

"We simply are not going to have these birds in the future unless we make a serious effort to conserve their habitats throughout our hemisphere," Turner said.

Agencies signing the agreement include the USFWS, National Park Service, Bureau of Land Management, U.S. Forest Service, Environmental Protection Agency, Agency for International Development and the Navy.

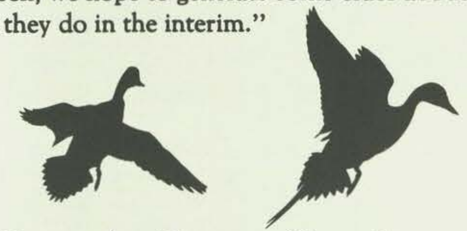
Scientists To Track Sea Turtle Hatchlings

Scientists at the University of Florida (UF) plan to track newly hatched sea turtles in their arduous journey toward open waters.

In a small boat, UF zoology doctoral student Blair Witherington and a three-member crew will follow endangered loggerhead hatchlings from shore to open seas. Witherington plans to connect the turtles to lightweight balsa wood floats that will not interfere with their progress. The floats will bear reflective tape, which the researchers can see with night-vision goggles.

Witherington hopes his project will reveal some hatchling secrets, such as how long the turtles maintain their frantic swimming pace.

"Once they leave the beach, the turtles' life history is very mysterious," he said. "No one sees them again until they are the size of dinner plates and on the other side of the ocean. Through this research, we hope to generate some clues about what they do in the interim."



Stamp Art Contests Open Soon

Beginning Sept. 3, the Game and Fresh Water Fish Commission will accept entries in the 1992-93 Florida turkey and waterfowl stamp contests. The deadline for submitting entries is Oct. 14.

Each year the Commission selects artwork to appear on the stamps. Sportsmen must purchase one or both of these stamps and affix them to their hunting licenses before hunting for ducks or turkeys. Stamp collectors and others interested in wildlife conservation also purchase the stamps. Proceeds from the sale of the stamps are used for research and management of both species.

Interested artists may contact contest coordinator Tom Wright at (904) 488-3831 for more information.

Planting A Dove Field

Now's the time to act if you want to prepare your own field for the upcoming dove season. Most dove-field crops need to be in the ground by mid- to late July to mature before the opening phase in October.

Sunflowers, browntop millet and grain sorghum are dove favorites, and each produces an abundance of seed.

Plant seed in strips of six to 10 rows, leaving equal strips of bare ground. This bare ground is important later when crops mature. Each crop matures at a different time, so alternate sections between the three crops to ensure a food supply late into the third phase.

Seeding rates vary according to type of cultivation, but here's a guideline: For broadcasting — 30 lbs. per acre of browntop millet or sunflowers and 20 lbs. per acre of grain sorghum. In rows — 10 lbs. per acre of browntop millet or grain sorghum and 15 lbs. per acre of sunflowers. Fertilize with 10-10-10 at 500 lbs. per acre broadcast or 300 lbs. per acre in rows.

Browntop millet will mature in early to mid-September. Mow it to scatter the seed. Disc the unplanted areas between it and the other crops to kill grass and weeds. This gives the birds a clean landing area and attracts more doves. Sunflowers mature next, followed by grain sorghum. Prepare both crops the same as browntop millet.

It is legal to mow the crop, but you may not take seed from the field and scatter it later.

Don't overhunt your field. Once a week is enough. It is difficult to get birds to return to a field hunted too frequently.

— Lt. Dewey Weaver

Wildlife-Related Survey Underway

The U.S. Dept. of Commerce's Census Bureau is conducting a survey of 40,000 hunters and anglers and 28,000 participants in other wildlife-related recreational activities.

The U.S. Fish and Wildlife Service sponsors the survey every five years to learn where and how often people participate, how much money they spend and what equipment they use. Federal and state agencies use the results to estimate wildlife-oriented recreation demands and to plan conservation and restoration programs.

Final results are expected by spring 1993.

"So the fish were biting, eh?"

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REGIONAL OFFICES

Florida Game & Fresh Water Fish Commission

Northwest Region
6938 Hwy. 2321
Panama City, FL 32409-9338
Telephone: (904) 265-3676

Northeast Region
Route 7, Box 440
Lake City, FL 32055
Telephone: (904) 758-0525

Central Region
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Ocala, FL 32674
Telephone: (904) 732-1225

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Floridana

Oh, how simple life would be if all of us were fisheries biologists — or at least if we all spoke Latin.

For example: If one biologist said "*Ictalurus furcatus*" or "blue catfish," his neighbor biologist would know exactly what fish he meant. What if you gathered four fishermen from different parts of the Southeast and showed them a photograph of this fish? "Why, that's a humpback blue," Number One might say. "Nope, it's a Mississippi cat," according to Number Two. "Looks like a madtom to me," Number Three might offer, while the other would say it resembled a chuckleheaded cat.

You don't have to be a sociologist to realize that people in different locales have different names for certain things. What we call "trucks" and "elevators" are known as "lorries" and "lifts" in Great Britain.

Likewise, fisheries biologists refer to a fish by its scientific (Latin) name or its accepted common name. But Joe Tacklebox in Florida might call that fish something else, while Marie Fishhook in Louisiana could have another name for it.

In order to help their fellow biologists bridge this communication gap, Donald Cloutman and Larry Olmstead compiled a list of nicknames in "The Vernacular Names of Freshwater Fishes of the Southeastern United States." The 108 scientific/common names on their list had nearly 600 vernacular names!

"Many fish names came across the Atlantic with the early English settlers," according to retired Game and Fresh Water Fish Commission biologist Vernon Ogilvie. "In fact 'bream' is a European term applied to a group of fishes like our sunfishes."

Some fish got their common names for obvious reasons. A largemouth bass has a large mouth. The broad snout of an alligator gar resembles that of a certain scaly reptile. A shellcracker's large teeth enable it to crack snail and clam shells, and the stumpknocker feeds on organisms in the crevices of submerged stumps. "'Stumpknocker' could actually apply to several fishes," Ogilvie said.

And indeed it does. In Florida, the vernacular "stumpknocker" is interchangeable with the common name "spotted sunfish" (*Lepomis punctatus*). Elsewhere in the Southeast, a stumpknocker could be a warmouth or a redear sunfish.

"'Redear sunfish?'" you ask. "You mean 'shellcracker' don't you?" Well, yes. But other folks may mean "U.S. Government improved bream," "Texas improved bream" or "G.I. bream." Those three names stem from the fish's release from various state and federal hatcheries. The channel catfish got the nickname "government cat" the same way.

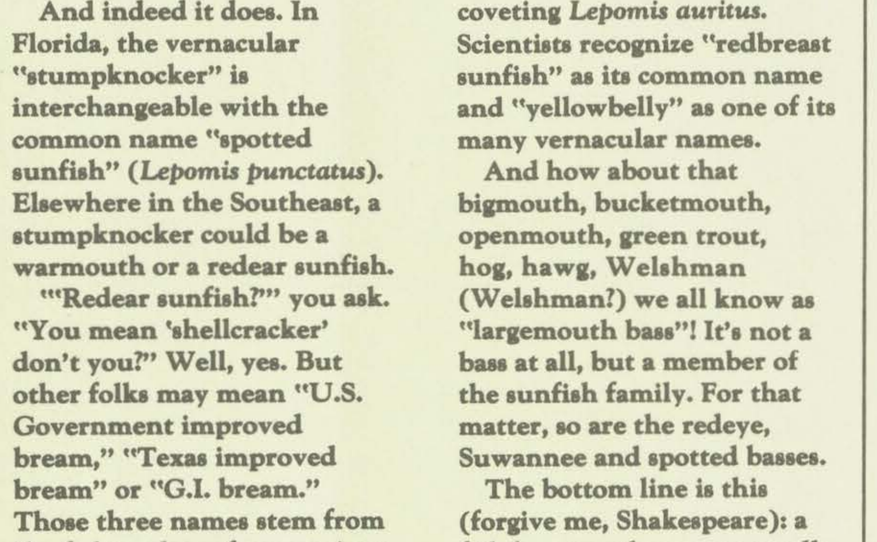
While "warmouth" (*Lepomis gulosus*) may mean "stumpknocker" to one, "mo mouth" and "goggle eye" may mean "warmouth" to another. But wait, "goggle eye" could mean "flier" or "crappie" to someone else.

Confused yet? Let's look at some more — like the bluegill (*Lepomis macrochirus*). Now there's a harmless little panfish, but it has a list of aliases as long as your pectoral fin. Most of them deal with a color: "coppernosed bream," "bluemouth sunfish," "yellow belly," "redbreasted sunfish." But those last two vernacular names are also claimed, with slight variations, by the name-coveting *Lepomis auritus*. Scientists recognize "redbreast sunfish" as its common name and "yellowbelly" as one of its many vernacular names.

And how about that bigmouth, bucketmouth, openmouth, green trout, hog, hawg, Welshman (Welshman?) we all know as "largemouth bass"! It's not a bass at all, but a member of the sunfish family. For that matter, so are the redeye, Suwannee and spotted basses.

The bottom line is this (forgive me, Shakespeare): a fish by any other name smells just as bad if you don't put it in the cooler soon enough.

— Scott Ball



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